MAY 22 1948

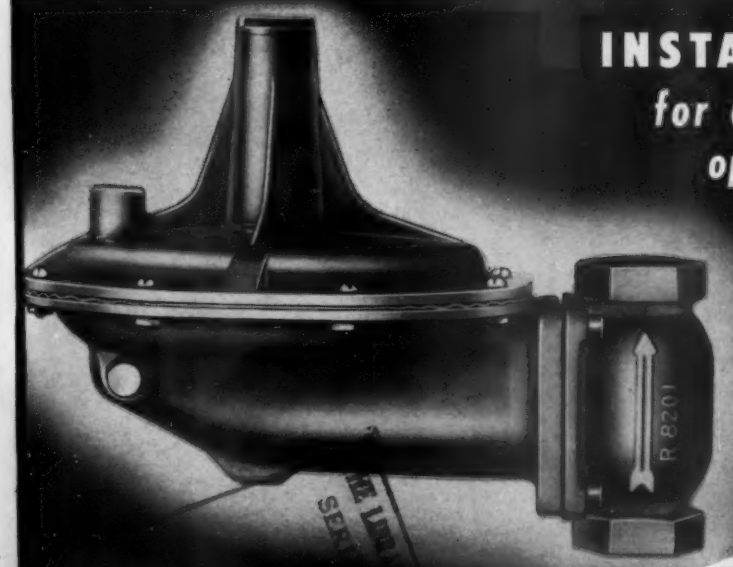
AMERICAN GAS JOURNAL

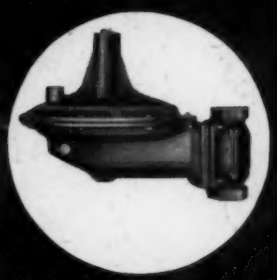
90th YEAR ©CIB 137637 MAY, 1948 VOL. 168, NO. 5

4

INSTALLATION POSITIONS

for easy connections—Spring Top operates pointing either up or down



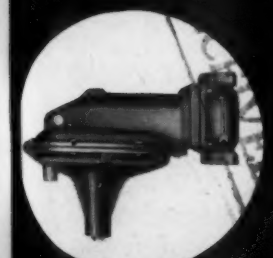


Vertical Position with down flow

REYNOLDS REGULATOR

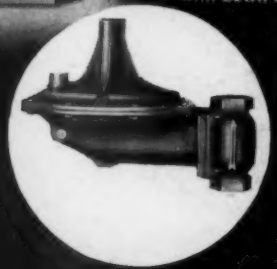
No. 1-2 Model 30

N.R. 8200 Series



Inverted Position for use where accumulation of water is problem

Horizontal Position with flow left to right or by changing setting 180° with flow right to left



Vertical Position with up flow

Reynolds

OUR FIFTIETH ANNIVERSARY

MOST SIZES IN STOCK

SKINNER-SEAL Bell Joint Clamps—the universal repair for bell and spigot joint leaks—are again available for immediate delivery in most sizes.

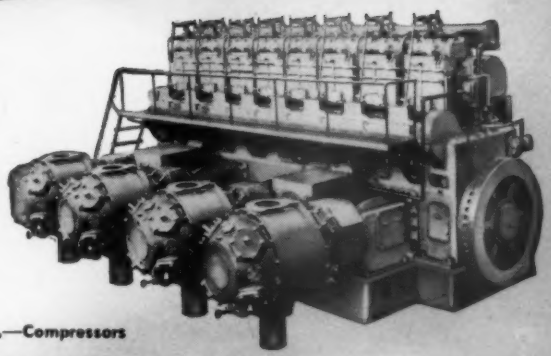
Gasket is completely sealed and protected; at the bell face by a Monel Metal Seal Band; at the spigot by hard, vulcanized gasket tip, acting as a plug. Equalized pressure forces gasket into every crevice in the joint, sealing the leak at its source. Sturdy malleable iron Compression and Anchor Rings—shaped and pressure-tested before shipping. Large ¾" high-tensile steel bolts, cadmium plated. Speedy one-man installation cuts repair costs.

M. B. SKINNER CO., SOUTH BEND 21, INDIANA

SKINNER-SEAL BELL JOINT CLAMP

FOR STORAGE—

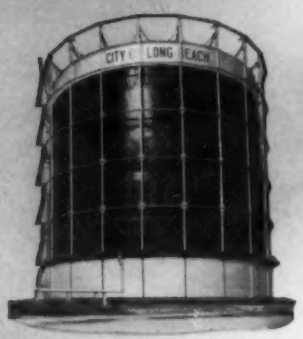
Matched Equipment — Matchless Service



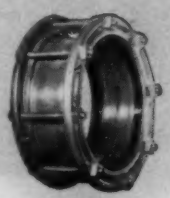
Clark Bros.—Compressors

Stacey-Dresser Engineering—L. P. Gas Plants

GAS HOLDERS	Stacey Bros.
BOILERS	Bryant
INERT GAS GENERATORS	Roots-Connersville
LIQUEFIED GAS STORAGE	Stacey Bros.
COMPRESSORS	Clark
PUMPS	Pacific
STEEL BUILDINGS	Ideco
COUPLINGS	Dresser Mfg. Div.
METERS, ROTARY POSITIVE	Roots-Connersville
HIGH-PRESSURE STORAGE TANKS	Stacey Bros.
PROPANE AIR AND BUTANE AIR PLANTS	
L. P. GAS PLANTS	Stacey-Dresser Engineering



Stacey Bros.—Holders



Dresser Mfg. Div.—Couplings

Between the gas holder and the world's largest liquid methane storage plant lies a treasury of gas knowledge.

This is what Dresser Industries passes to you with the sale of any storage equipment.

The separate companies in the Dresser family are each specialists in some type of equipment. But as a group they draw upon the pooled engineering and research of the whole of Dresser Industries, Inc. That covers the gas industry from well drilling equipment to research into coal gasification and sub-zero storage, on the world's largest scale.

Dresser Industries, through its operating companies, has built the largest Liquid Petroleum Gas Plants in the world. Also, through its operating companies it manufactures a complete line of storage equipment, with *variations in types* of equipment. Therefore, you get the benefit of the broadest knowledge of the industry and salesmanship which does not have to carry the torch for any particular type of pump, holder or whatever it is you need.

DRESSER INDUSTRIES, INC.

TERMINAL TOWER • CLEVELAND 13, OHIO

The only company doing an over-all job from source to home appliance for the Gas Industry

BOVAIRD & SEYFANG Mfg. Co.
Bradford, Pa

BRYANT Heater Company
Cleveland, Ohio; Tyler, Texas

CLARK Bros. Co., Inc.
Olean, New York

DAY & NIGHT Mfg. Co.
Monrovia, Calif.

DRESSER Mfg. Division
Bradford, Pa.

DRESSER Mfg. Company, Limited
Toronto, Ont., Canada

INTERNATIONAL Derrick & Equipment Co.
Beaumont & Dallas, Texas; Torrance, Calif.; Columbus, Marietta & Delaware, Ohio

KOBE, Inc.
Huntington Park, Calif.

PACIFIC Pumps, Inc.
Huntington Park, Calif.

PAYNE Furnace Co.
Beverly Hills, Calif.

ROOTS-CONNERSVILLE Blower Corp.
Connersville, Ind.

SECURITY Engineering Co., Inc.
Whittier, Calif.

STACEY BROS. Gas Construction Company
Cincinnati, Ohio

Stacey-Dresser Engineering Division
Cleveland, Ohio

problem...

solution

Neither spiralling maintenance or repair costs need be much of a problem to those who use Sprague Meters in their gas installations. Sprague equipment has proven through the years its accuracy and long life under normal and abnormal conditions. Uniformity of parts and simplicity of assembly insure lower costs in your service departments. The new lightweight Sprague Zephyr meters along with the well known iron case line offers types suitable to meet every requirement for gas measurement and regulation.

SPECIFY

SPRAGUE

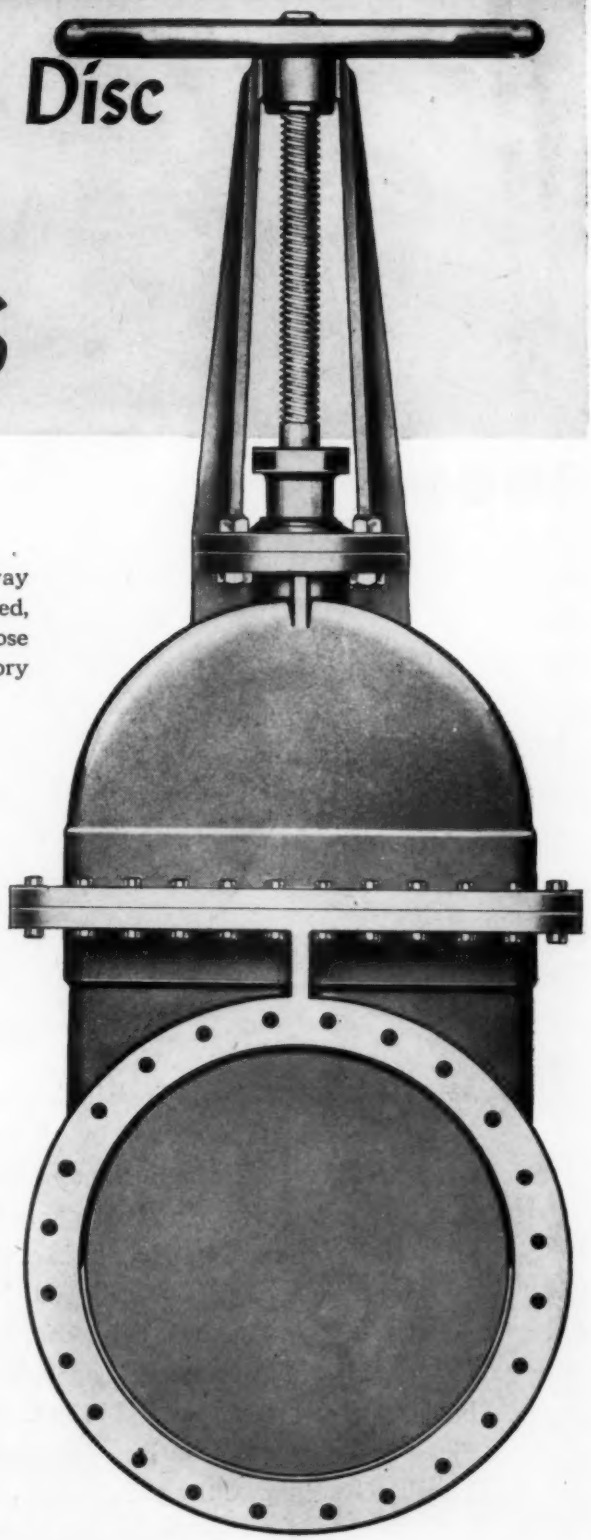
METERS & REGULATORS

THE SPRAGUE METER COMPANY

BRIDGEPORT 4, CONNECTICUT

ANOTHER SEMET-SOLVAY FEATURE

All Iron, Double Disc GATE VALVES



FOR MORE THAN quarter of a century, Semet-Solvay gate valves have given the gas industry long-lived, trouble-free service. Accurate machining and close control of design and manufacture assure satisfactory fit for low pressure operation.

These sturdy gate valves are equipped with our featured wedging device. This device provides for positioning of the discs before the wedging action starts, thus allowing accurate seating.

A particular advantage is found in the unusual adaptability of the Semet-Solvay gate valve. Due to its internal construction, the short face-to-face dimension of the flanges permits installation of these valves as replacements for any standard valve.

4″ to 8″ size.....50 psi
10″ to 16″ size.....35 psi
20″ to 36″ size.....25 psi

We invite your inquiries.

SEMET-SOLVAY ENGINEERING DIVISION
40 RECTOR ST., NEW YORK 6, N.Y.

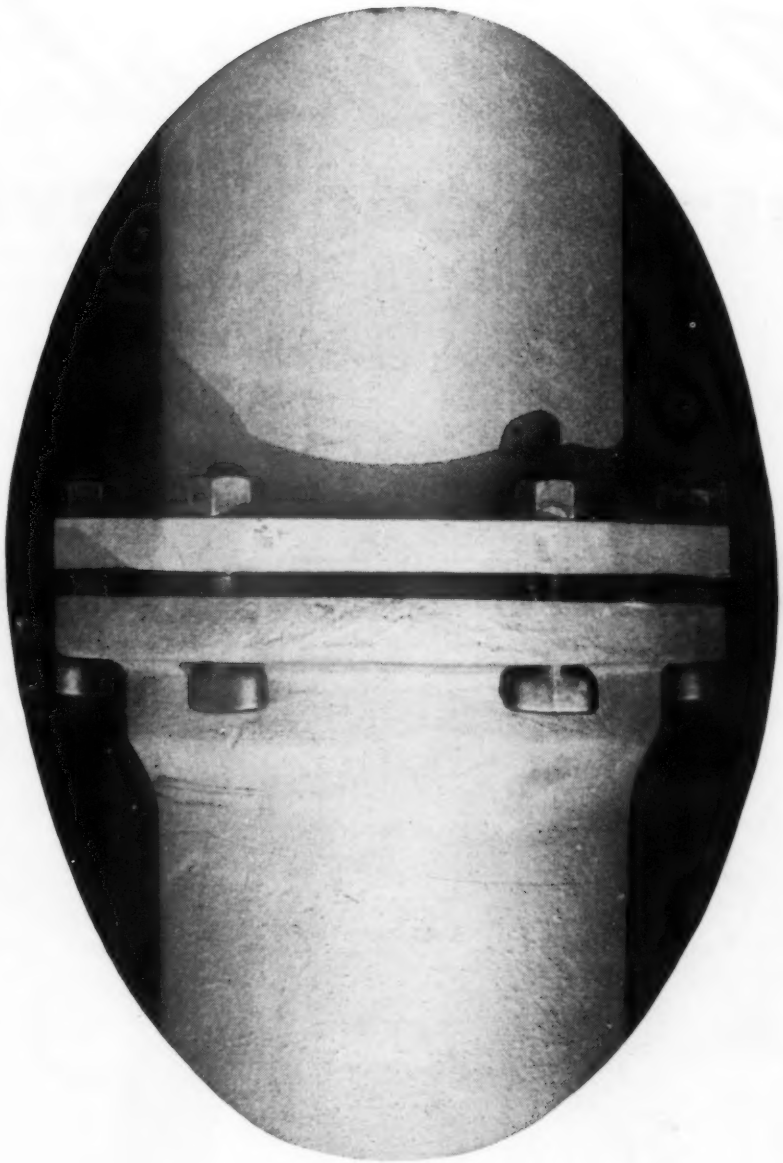
ALLIED CHEMICAL & DYE CORPORATION

AMERICAN GAS JOURNAL, May, 1948. Vol. 168, No. 5. Published monthly by American Gas Journal, Inc., at 34 North Crystal St., East Stroudsburg, Pa., Executive and Editorial offices at 53 Park Place, New York 7, N. Y. Entered as second class matter October 7, 1928, at the post office at East Stroudsburg, Pa., under the Act of March 3, 1879. Printed in U.S.A.

Only one tool required —an ordinary ratchet wrench.

Speed and simplicity of installation are advantages of Standardized Mechanical Joint Cast Iron Pipe valued by all construction superintendents. An additional advantage is that all accessories and fittings are standardized, and therefore interchangeable. Still another advantage is that untrained workmen can do the job right and rapidly, even on wet days or in a wet trench. But the fundamental feature is the established fact that a gas distribution or transmission line, constructed with Standardized Mechanical Joint Cast Iron Pipe is a long-lived, bottle-tight line under all working pressures. If you don't have a copy of our 88-page cloth-bound book, "Manual of Mechanical Joint Cast Iron Pipe and Fittings for the Gas Industry" please write to Cast Iron Pipe Research Association, Thomas F. Wolfe, Engineer, Peoples Gas Bldg., Chicago 3, Illinois.

Collect and sell your scrap NOW



STANDARDIZE ON

CAST IRON

Standardized **MECHANICAL JOINT**

PIPE

Universal

IS BUSTING OUT ALL OVER!

The BIGGEST CAMPAIGN for the BEST GAS RANGE in Our 77 Years!

UNIVERSAL'S epoch-making "Comfort-Touch," its "Whirlpool" broiler, Radiant Mesh broiler burner, removable glass oven panes, all found only in UNIVERSAL . . . plus fully automatic oven control and a score of other advanced aids to good cooking . . . are being told in the greatest advertising campaign in Cribben & Sexton's history.

Advertising appears in America's leading magazines, with a combined circulation of 80,000,000. Add to this the tremendous "Gas Has Got It!" campaign now conducted by A.G.A., featuring UNIVERSAL. Then top it off with a powerful program of cooperative advertising by UNIVERSAL dealers.

Isn't this the kind of selling job you would like to be in on? . . . And it's only Spring!

CRIBBEN & SEXTON

Universal

TRADEMARK REG.

GAS RANGE

with Exclusive "Comfort-Touch"

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CRIBBEN & SEXTON CO., 700 NORTH SACRAMENTO BOULEVARD, CHICAGO 12, ILLINOIS

Still Another CRYSTOLON* Brick Installation

This Time: In a Semet-Solvay Reverse Flow Set

Location: Pawtucket, R. I. plant, Blackstone Valley Gas & Electric Company

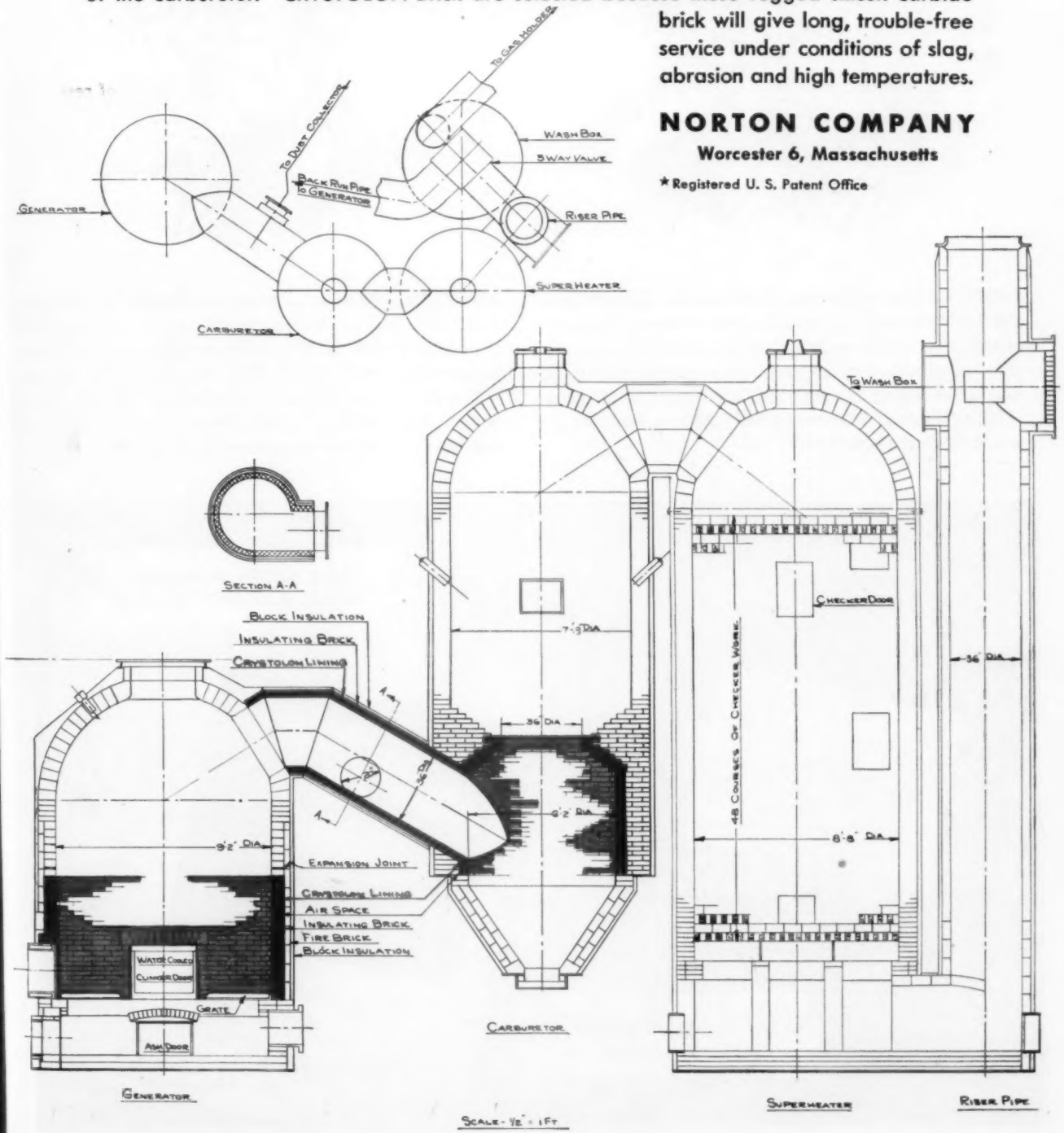
Masonry Contractor: W. J. Gaskill Co., N.Y.C.

The drawing below shows the installation of CRYSTOLON Brick in a reverse flow, open carburetor type of water gas set. Twenty-four courses of CRYSTOLON Brick were laid in the generator, extending up five feet from the grate line. A full lining of CRYSTOLON Brick was set in the generator offtake, and 28 courses of these brick were laid in the base of the carburetor. CRYSTOLON Brick are selected because these rugged silicon carbide brick will give long, trouble-free service under conditions of slag, abrasion and high temperatures.

NORTON COMPANY

Worcester 6, Massachusetts

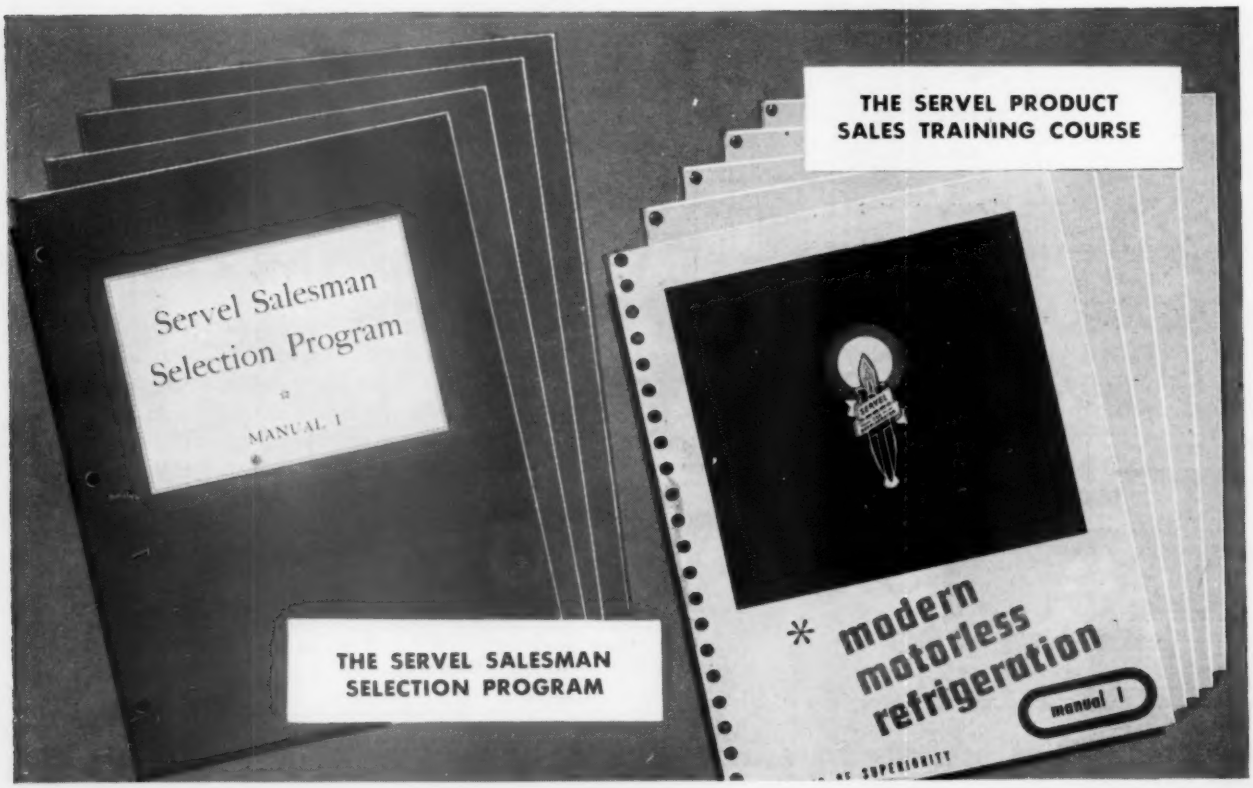
*Registered U. S. Patent Office



Which one puts the "sales"

EAGER EGBERT—Eagerness is fine, but Egbert goes too far. He tries to oversell. Goes in for too much showmanship . . . with too little salesmanship. Believes he can sweep customers off their feet with oratory, stunts, and by knocking competitors. Customers resent being "high-pressured." They want facts, figures, features . . . not the "ole malarkey."

RESTRAINED REGGIE—A certain amount of restraint is all right, too . . . but not to the point of letting the product sell itself. After making a few brief comments, Reggie closes like a clam. The customer is left to dig out most of the selling features. Today, with so many competitors fighting for the customer's dollar, it takes *aggressive selling* to move merchandise.



into salesmanship?

INTIMATE ALVIN—Friendliness goes a long way . . . but Alvin gets so chummy that his prospects become annoyed. In trying to put the prospect at ease, he talks about everything BUT the product. By the time he's ready to go into the product story, the prospect's patience has worn thin. Today, prospects' time is valuable . . . and so is the salesman's.

SINCERE, HARD-WORKING HARRY—Now Harry's friendly and enthusiastic . . . but he doesn't let it run away with him. And he can use restraint at times without crawling into a shell. What's more, he knows his product inside and out. In short, he's an honest-to-goodness salesman. How come? Because he was carefully selected and trained for his job *by his employer.*

Here's how you can find the right salesmen... and train them to sell more GAS refrigerators!

TO BE READY for the coming buyers' market . . . and to meet growing competition, you must build an aggressive, hard-working sales force. This calls for selecting and training the right men—NOW—to sell Gas Refrigerators and other gas appliances.

First, find the right men

The Servel Salesman Selection Program helps take the guesswork out of hiring. It helps you avoid wasting time and money on men who don't have the necessary personal qualifications. The complete program consists of four selection procedures: (1) Preliminary Brief Screening, (2) Weighted Application, (3) Telephone or Personal Checkup, (4) Patterned Interview. Each has a special job to do. Each helps you find the best salesmen . . . at least expense.

Then they must be trained

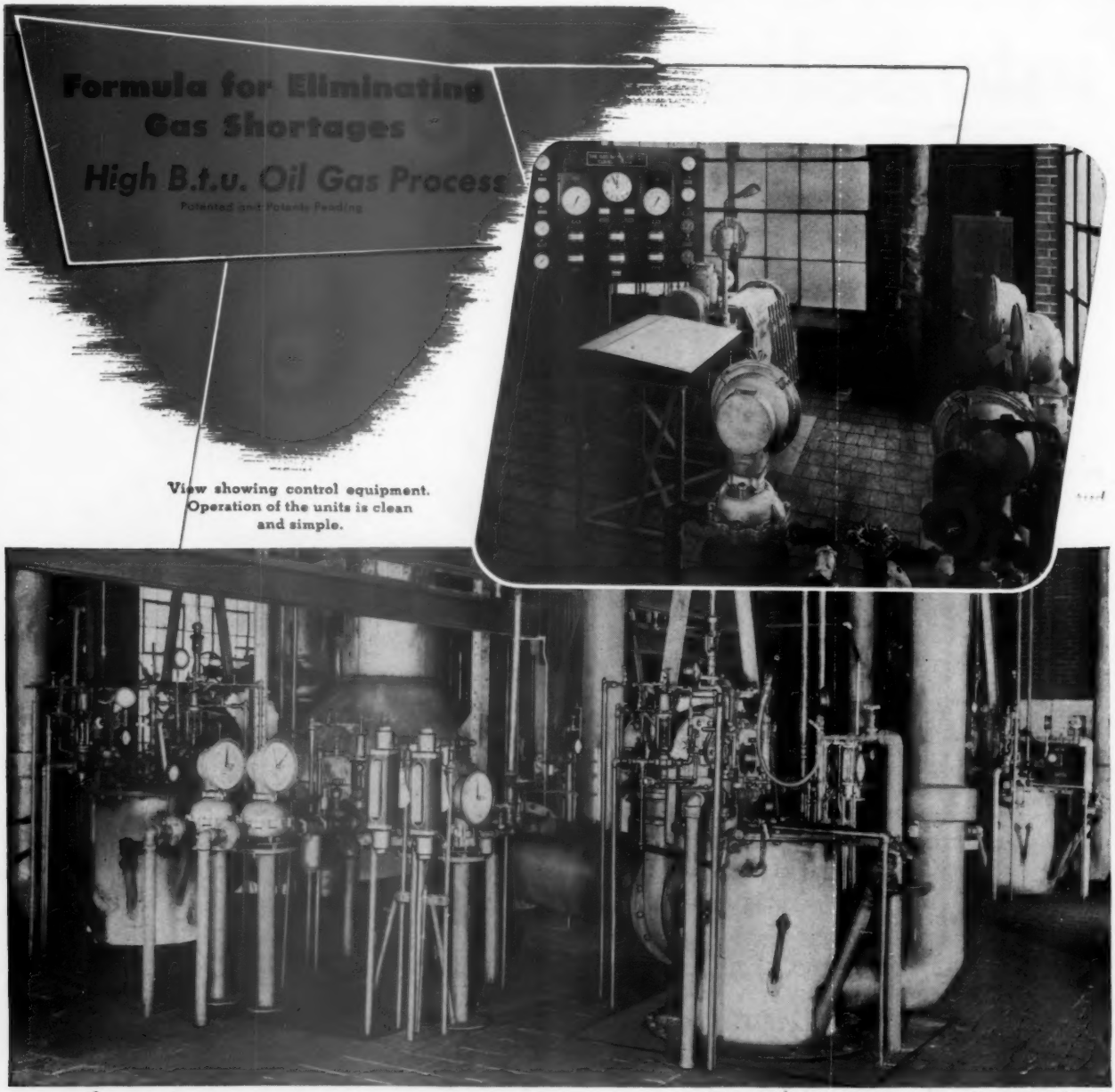
Hiring the best men is not enough. They must be thoroughly schooled in the product . . . and how best to sell it. That's where the famous Servel Sales Seminar comes in.

The experience and selling "savvy" of 750 top-flight refrigerator salesmen have gone into this Sales Seminar. It includes five illustrated manuals that serve as basis for instruction. The program also presents charts, "props," case histories and many other tested training devices. This course is ideal as a refresher course for veteran salesmen as well as new men . . . for it's been a long time since *anybody* has had to do any aggressive, creative selling.

Fortify for the future—the near future—NOW! Find the best salesmen . . . and keep them selling. For full information, see the yellow folder in your Servel Advertising Portfolio, or write to Servel, Inc., Evansville 20, Indiana.

Servel Inc.

EVANSVILLE 20, INDIANA



View showing control equipment. Operation of the units is clean and simple.

These High B.t.u. Gas Generators have doubled plant and distribution capacity at a cost of less than 2% of the original plant investment.

The installation of the high B.t.u. Oil Gas Process offers an immediate, economical way to double plant and distribution capacity — eliminating the restriction of gas sales.

Oil gases produced are highly interchangeable with natural gas for distribution purposes or to replace other types of manufactured gas. Numerous installations have proven these and other outstanding advantages (1) doubled plant and distribution capacity in therms (2) reduced manpower requirements (3) dependable 24-hour operation without shutdowns (4) cleaner operation.

Write for the reprint "Some Economies on Use of a High B.t.u. Gas" which describes a typical installation.

THE GAS MACHINERY COMPANY

16114 WATERLOO ROAD
CLEVELAND 10, OHIO

Designers • Fabricators • Erectors
Gas Plant Equipment and Industrial Furnaces

VOLUME 168
Number 5

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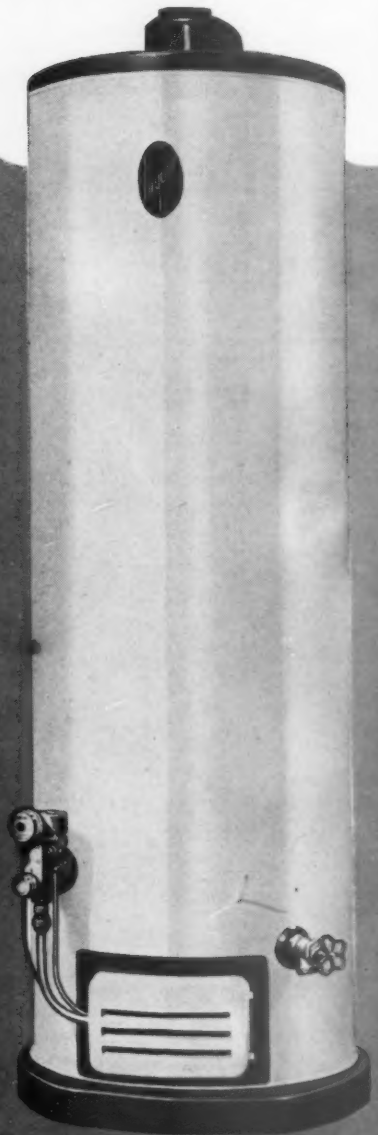
HERE'S THE WATER HEATER THAT'S Designed to grow old

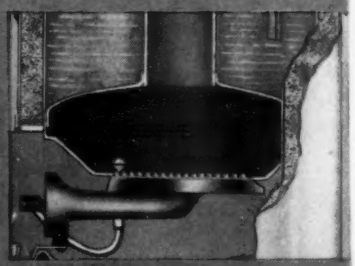


BRYANT MODEL 115—The gas-fired automatic storage water heater with the customer appeal look . . . and with the construction and operating features designed *for long service.* It has a special heavy gauge steel tank, hot-dip galvanized and designed to eliminate air pockets in the head. It has the exclusive Bryant aeration plate that radiates the heat to water, ups efficiency of heater. It has a thick wall of effective insulation that completely surrounds the tank. Its flat-base construction provides a sturdy support and reduces height considerably.

This is the water heater that has *everything!*

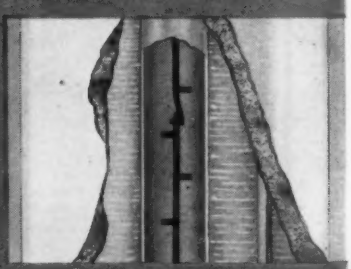
CAST IRON BURNER

with raised ports—*specifically drilled and orificed* for the type of gas to be used. Controlled by 100% safety pilot and new Grayson Unitrol with thermocouple magnetic feature.



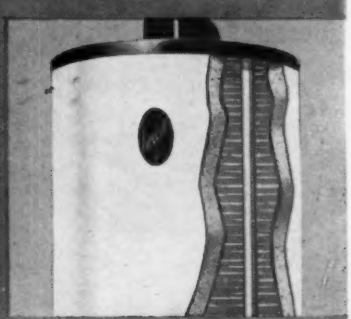
LINK-TRAP BAFFLE

puts all of the heat to work, is constructed in segments so that it can be removed *easily* without breaking pipe . . . *even under low ceiling conditions!* A Bryant exclusive.



THE PROTECT-O-ROD

magic magnesium alloy rod that provides anodic protection for the tank . . . prevents tank corrosion . . . helps the Bryant supply clean, rust-free hot water! *Adds years to the life of the tank!*



Let the pup be furnace man

bryant

AUTOMATIC HEATING

BRYANT HEATER COMPANY, CLEVELAND, OHIO

One of the Dresser Industries

Like all Bryant products, Bryant Water Heaters are approved by the American Gas Association for natural, manufactured, LP or mixed gases.

MAY
1948

AMERICAN
GAS JOURNAL

VOLUME 168
NO. 5

Texas Natural Gas

Its Fields, Reservoirs and Yearly Production From 1939 to 1947; Recoverable Reserves and New Transmission Lines

By
Colonel Ernest O. Thompson
Chairman
Railroad Commission of Texas

OUR STATE OF TEXAS has made many records in bigness. This follows, of course, mainly on account of the vast area of her domain and her geology.

Of course, you expect Texas to have more cattle, more sheep and more wool and mohair than any other state.

Our wide range in latitude makes possible wheat growing in the Panhandle, cotton in the middle of the State, and citrus fruit, onions and lettuce in the Rio Grande Valley.

Our oil recovery has been, and is presently, tremendously enormous. The 1146 separate oil fields of Texas, with 106,000 producing oil wells have a total production for the year 1947 of 816,188,478 barrels of oil. The total production for the State from the inception of oil discovery is 11,242,720,000 barrels. The present daily rate, of oil production is 2,438,000 barrels at the price of $2.60 per barrel.

This seems enormous in volume and in dollar value at present prices, but there is another commodity produced in Texas in even greater volume, worth much more in dollars, than even the oil presently being produced in this proud Lone Star State. I refer to gas—natural gas, sour and sweet and casinghead gas.

Well Head Price

For many years, I have been crusading for a fair price for gas at the well head in Texas. It has been my plea that natural gas was worth ten cents a thousand cubic feet at the well. I said this when much of our gas was selling for as little as 2 cents per thousand cubic feet.

Gas was selling for anything the owner could get for it in the field. We had no sufficient market; therefore, the buyer bid gas in at his own willing price. The seller could hardly bargain when there was so little and often no competition in the deal.

I recall in my law practice many oil and gas leases were made in the Panhandle, providing that in case oil was discovered in paying quantities, the land owner would receive one eighth royalty, but in the event that only gas was discovered, the land owner was to get $50, or, in some cases, $100 per year for each gas well so unfortunately brought into production.

Obviously, this was because there being no market for the gas and no market value, it was looked upon as a failure or a near economic tragedy when the drill bit hit gas and only gas.

Billions of feet of gas were blown into the air in the hopes that perhaps the well would "blow in" oil production. About the only use for the gas was the fuel it furnished for further drilling, and most prospectors drilled as far away from gas wells as they could.

Underwood & Underwood, Washington
Col. Ernest O. Thompson

It is shown by our Commission records that in 1947 the natural gas produced from the gas wells of Texas was 2,241,697,304 MCF.

If this gas had been sold for 10 cents a thousand at the well, the money value of this natural resource would have been $224,169,730.40 when severed from the sovereign soil of Texas.

As a matter of fact, the Commission ascertained upon a hearing on the Panhandle Gas Field, that the weighted average going price for pipe line gas was 4.2526 cents per thousand cubic feet, at a base pressure of 16.4 pounds per square inch absolute.

Recent Statute

This action on the part of our Commission was in conformity with the Texas Statute passed at the last session of the legislature, which permitted the manufacture of carbon black from sweet gas, provided the price paid for such gas so used was not less than the price paid by pipe line companies for gas for light and fuel. The act made it the duty of the Texas Railroad Commission to hold hearings annually or semi-annually to ascertain and post for official notice at our offices, what the pipe lines were paying currently for sweet gas. The first hearing was held last fall; a second hearing is set now to be held in Amarillo at the Herring Hotel on May 13, 1948, to ascertain the current level of the price of gas sold to pipe lines.

This act was passed at the behest of the carbon companies, who wanted to get out from under the stigma of being thought to be wasteful users of natural gas. They said they were making useful necessities of modern life from carbon black, and wanted to be legally free to make carbon black from sweet gas, and were willing, if permitted, to pay as much for gas as pipe lines were paying for their gas.

The Statute formerly limited carbon manufacture to sour gas and set a top limit of 750 million cubic feet on that use in the Panhandle Field.

So here is a statutory recognition of a price factor in conservation and use of natural gas. Some gas and oil companies have threatened to challenge the constitutionality of this act. None have gone to court as yet.

There is no question in my mind that each additional competing use of gas will tend to bring the market price of gas up to its true value as a competing fuel with coal and oil.

Gasoline from Gas

Still another new use for gas is the plan contemplated by Hydrocal Corporation in their plant being built at Brownsville, Texas, at a cost of some twenty million dollars. They propose to convert 60 million cubic feet of gas daily into about 5600 barrels of 82 octane gasoline and some 1200 barrels of commercial alcohol with other by-products. Paying 5 cents a thousand for gas, they believe they can turn out gasoline at something below 6 cents per gallon.

All these things add up, in my mind, to a higher price at the well for gas. I vision the day when 10 cents a thousand will be the going price for natural gas at the well in Texas. Competitive demand will bring out the true value of natural gas.

TABLE I GAS WELL GAS PRODUCTION STATE OF TEXAS

Year	*Production MCF*	*Daily Avg. Prod. MCF*	*% Increase Over 1939*
1939	872,268,000	2,389,775	—
1940	1,087,089,000	2,970,189	24.3
1941	1,382,830,000	3,788,575	58.5
1942	1,508,794,000	4,133,682	73.0
1943	1,683,920,809	4,613,482	93.1
1944	1,907,704,322	5,212,307	118.1
1945	2,065,266,423	5,658,264	136.8
1946	2,098,867,220	5,750,321	140.6
1947	2,241,697,304	6,141,636	157.0

Oil and Gas Demand vs. Coal

The known deposits of oil and natural gas in the United States constitute only 1% of our known mineral energy resources.

But it is most challenging to note the distribution shift in use of our energy resources in the past quarter century.

In trillions of B.T.U.s

	Year 1920	Year 1946
Coal	80%	49.3%
Crude Oil	12%	33.1%
Natural Gas	4%	13.2%
Water Power	4%	4.4%

In my opinion 1947 data, when available, will show even greater shift.

The 1% (oil and natural gas), because of their cheapness and added convenience, have been taking on more and more customers from former coal burners.

The coal strikes had much to do with this shift. Some day the coal people will realize this, and do a little research on how to compete with these new fuels. But put this down. Cold economics will, in the long run, even up the competition.

When the price of gas goes up to where it should, and when coal use is cheaper than gas, some will convert back to coal. Some have already done so because of oil and gas shortage, due to lack of transportation facilities for gas and the oil demand exceeding domestic supply.

We are today a net importer of oil and will continue to import more oil than we export.

With these introductory comments, some data on Texas gas production from strictly gas wells will be of interest to the industry.

Gas Production in Texas

The production of natural gas from gas wells in the State of Texas has taken rapid strides over the period of the last nine years. As shown in Table I, the gas well gas production during 1939 amounted to 872,268,000 MCF, or a daily average figure of 2,389,775 MCF from gas wells only. A greatly contrasting figure for the year 1947 shows natural gas production in the amount of 2,241,697,304 MCF, or a daily average take of 6,141,636 MCF. The 1947 production shows an increase over the 1939 production in the amount of 157%. It has been estimated by authoritative sources that the natural gas production in the State of Texas will continue to increase and will reach a total of approximately 3½ trillion cubic feet of gas well and casinghead gas in 1948, 4 trillion cubic feet in 1949, and 4¾ trillion cubic feet during 1950.

Gas Fields and Reservoirs

As shown in Table II, the main source of gas supply in the State of Texas is from Railroad Commission Districts 2, 3, 4, 6, and 10. District 2 reflects a daily average production during the month of December 1947, of 499,577 MCF; District 3 produced, during the same period, 1,518,151 MCF daily; while District 4 produced 1,067,880 MCF. Due to the tremendous withdrawals from the Carthage Gas Field, located in Panola County, the daily average take during the month of December 1947, is shown as 1,206,905 MCF for Commission Districts 5 and 6. In Commission District 10, which includes the Panhandle Field, together with the rapidly expanding Hugoton Area, we find a daily average withdrawal for this same period in the amount of 2,400,667 MCF. As of January 1, 1948, there were 927 gas fields in the State of Texas, including 1830 reservoirs and a total of 8724 gas wells, 5311 of which were producing. These wells produced on a

TABLE II GAS FIELDS AND RESERVOIRS STATE OF TEXAS
January 1, 1948

RR Commission District	*Fields*	*Reservoirs*	*Total Wells*	*Wells Producing*	*Wells Shut-In*	*Gas Prod. MCF Daily Avg., Dec., 1947*
1	26	31	150	30	120	10,458
2	150	351	739	316	423	499,577
3	196	416	1159	591	568	1,518,151
4	243	650	1695	674	1021	1,067,880
5-6	64	115	1262	825	437	1,206,905
7-B	133	141	684	426	258	58,446
7-C	21	21	65	24	41	9,310
8	53	58	451	114	337	42,942
9	38	44	175	64	111	28,540
10	3	3	2,344	2,247	97	2,400,667
Grand Total	*927*	*1,830*	*8,724*	*5,311*	*3,413*	*6,842,876*

daily average during the month of December 1947, 6,842,876 MCF. This represents an increase of 11.1% over the daily average December 1946, production figure of 6,161,376 MCF.

Of the total natural gas produced during 1947, 87.5% was classified as sweet gas, while 12.5% was classified as sour. The disposition of this natural gas production reflects the fact that 21.62%, or a total of 482,317,604 MCF, went directly to pipe lines for light and fuel purposes. A total of 62,771,696 MCF or 2.81%, was utilized in lease operations and drilling. Natural gas used in gas lift installations amounted to 68,893,207 MCF, or 3.09% of the grand total. It is interesting to note that 31.47% or 702,298,508 MCF of natural gas went directly to recycling plants, while 39.91% or 890,536,672 MCF of gas was transported to gasoline plants for liquid extraction. The balance of this natural gas production went respectively to repressuring facilities, carbon black plants, and vented in gas well testing, in the amount of 0.49%, 0.47%, and 0.14%. These percentages are very similar to the breakdown of disposition of natural gas during 1946, with a slight gain in natural gas to pipe lines and to gasoline plants.

Hydrocarbon liquids produced from gas well gas shows an increase over the year 1945. During 1947, a total of 42,354,559 barrels of natural gasoline was produced, 18,336,669 barrels of butane and propane, and 1,508,429 barrels of other products for a total liquid production of 73,232,542 barrels. During the year 1945, 37,915,053 barrels of natural gasoline were produced, 10,189,384 barrels of butane and propane, and 1,223,524 barrels of other products for a total of 59,744,891 barrels. This shows an increase of 12.3% in liquid production from natural gas wells during 1947 over 1945. Even with this great increase, there were acute shortages of liquefied petroleum gases this winter.

The Commission records reflect that during 1947, a total of 639 natural gas wells were completed in the State of Texas. These completions accounted for a total of 64 new fields and 56 new reservoirs in old fields in the State. A breakdown as to Railroad Commission Districts in which these new fields and new reservoirs were discovered is shown in Table III. Most of these new discoveries were in counties along the Gulf Coast Arch, from Hidalgo County in the Valley, up across the Corpus Christi area, and extending to Houston and Beaumont Areas. Commission District 2 accounted for a total of 22 new fields and 17 new reservoirs; while, District 3 shows a total of 13 new fields and 21 new reservoirs during 1947. District 4 shows the largest number of discoveries in the amount of 25 new fields and 16 new reservoirs. The balance of these new discoveries are divided between Districts 6 and 7-C. As compared to the February 1947, figure of 770 gas fields in the State of Texas, there are now a total of 927 fields. According to the latest Commission figures, the total daily open flow potential of all the gas wells in Texas amounts to 195,558,705 MCF. Even with the rapid increase in natural gas production, these enormous potentials are only slightly tapped to the extent of 3.45% according to December 1947, production.

It will be seen that there are still 3413 gas wells shut in. This does not necessarily mean they are in distress for a market.

In some instances, the gas is dedicated to serve a line not yet in operation.

But it does show great additional ability to furnish gas.

TABLE III NEW FIELDS AND NEW RESERVOIRS—1947 STATE OF TEXAS

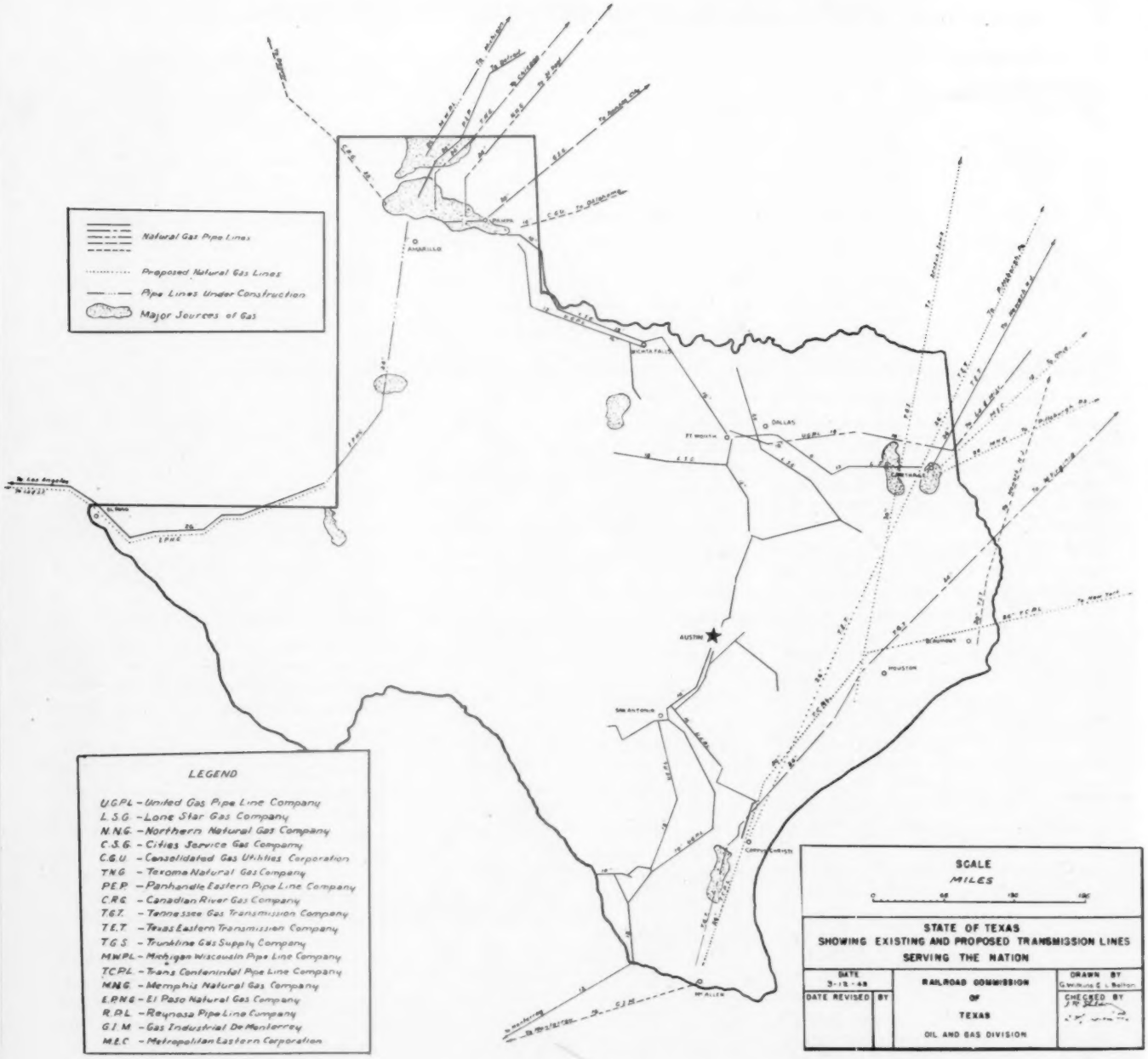
RR. Commission District	*No. of New Fields Discovered in Texas*	*No. of New Reservoirs Found in Older Gas Fields*
2	22	17
3	13	21
4	25	16
6	3	2
7-C	1	0
Total	64	56

The hunt for gas fields will soon be as urgent and feverish as is the frenzied search now all over America for oil.

The days of disappointment over discovering a gas well instead of an oil well are over. A gas well is worth as much as an oil well. Six thousand cubic feet of gas equals a barrel of oil in heat value. What does that make gas worth?

Recoverable Reserves

As of January 1, 1947, the estimated recoverable reserves in the State of Texas was calculated by reliable sources as being in the neighborhood of 85¼ trillion cubic feet, at a base pressure of 16.4 pounds per



square inch and at a temperature of 60° F. The gas reserves of Texas compared with those of the entire United States amounted to 56.5% of the total of the nation's gas reserves which has been estimated to be 151¼ trillion cubic feet of gas. As a means of comparison, the reserves of Texas were computed to be 85.8 trillion cubic feet as of January 1, 1946, compared to 144.3 trillion cubic feet for the entire United States, or 59.5% of the total. As of January 1, 1945, the estimated recoverable reserves for the State of Texas was set at 82 trillion cubic feet, while that of the United States was calculated to be 140 trillion cubic feet. At that time, the total recoverable gas reserves for the State of Texas amounted to 58.6% of the nation's total. These reserves have been divided into gas not associated with oil, gas associated with oil, and dissolved gas. The non-associated gas in the State of Texas as of January 1, 1946, amounted to 66.8 trillion cubic feet. The natural gas fields in Texas having the largest proven reserves are the Panhandle Field which, at the present time, included the Texas part of the Hugoton Area, Carthage, Katy, Old Ocean, Long Lake, Agua Dulce, Cayuga, Grapeland, Stratton, and LaGloria. The largest recoverable reserves in the State of Texas are found in Commission District 10 (the Panhandle) which shows a value of 25.7 trillion cubic feet. District 3 is second with a recoverable reserve figure of 20.1 trillion cubic feet of gas. The fields in the Commission District 4 account for 18.6 trillion cubic feet of natural gas reserves while District 6 shows a figure of 9.0 trillion cubic feet.

New Transmission Lines

The Natural Gas Industry has gigantic plans for the future, in line with the expansion of their facilities and the building of new gas pipe lines that will carry gas from the fields of Texas to markets in the East and Mid-West. One of the largest proposals is that of Trans-Continental Pipe Line Company which is

seeking a permit from the Federal Power Commission to build an 1800 mile 26 inch natural gas pipe line from the Valley of Texas to markets in Philadelphia and New York. This pipe line is proposed to have a capacity of 325,000 MCF per day of natural gas and will cost approximately 150 million dollars. In the event that this application is granted by the Federal Power Commission, the proponents propose that work will begin on this line in March, 1949, and completion is expected by November of 1950.

The Tennessee Gas and Transmission Company has an application before the Federal Power Commission to loop its main line from a point near Corpus Christi to a point in Kentucky, and also to build a new line from this point in Kentucky to Boston. These lines will vary in size from 16 to 30 inches in diameter and will account for a total of 1749 miles of pipe line. The capacity of The Tennessee Gas and Transmission Company's system will be increased from 455,000 MCF daily ultimately to 1,055,000 MCF daily. Total cost of this project amounts to 150 million dollars.

The Memphis Natural Gas Company contemplates laying a 1116 mile 24 inch pipe line from East Texas to Pittsburgh, Pennsylvania, at a total cost of 63 million dollars. This application is now pending before the Federal Power Commission.

The new line from West Texas to California will take largely of casinghead gas now flared.

Greater quantities of natural gas will be taken by the United Gas Pipe Line Company to supply their affiliated pipe line, namely Atlantic Gulf Gas Company which now has an application before the Federal Power Commission to lay a 1530 mile natural gas pipe line from Hattisburg, Mississippi, to points in Florida and South Carolina. Cost of this transmission line will be in the neighborhood of 57 million dollars.

A new venture, that of the Texas Gas Transmission Corporation* is planning a natural gas pipe line from Texas to a point near Middletown, Ohio. This line will connect with the present Memphis and Kentucky pipe systems to pump into existing lines a continuous flow of gas for heating, cooking and manufacturing.

The line will run directly into the City of Memphis, thus bringing to the city's residents a gas supply directly from Texas, in addition to the fuel supplied by the full capacity of the present Memphis Natural Gas Company system.

The Panhandle Field of Texas will have a new outlet in the Michigan-Wisconsin Pipe Line Company which is now constructing a 1069 mile pipe line, 22 to 26 inches in diameter from the Hugoton Area to points in Michigan and Wisconsin. This new pipe line will be supplied by gas wells owned by the Phillips Petroleum Company of Bartlesville, Oklahoma. Their plans call for a drilling program of over 600 new wells to be drilled in the Panhandle Field and Hugoton Area in 1948, in order to meet the demand for this new market.

Another new proposed transmission is that of the Trunkline Gas Supply Company, which proposes to lay an 885 mile 30 inch line from Wharton, Texas, to Keokuk, Iowa.

The greatest addition of all in prospect is the third line proposed by the Texas Eastern who is considering laying another gas pipe line along beside its present big and little inch lines to New York and on to New England.

Truly, natural gas has come into its full fruition. The stress now will be henceforth to supply the demand. It seems everybody now wants this convenient, economical, efficient fuel. Price will regulate its use and its conservation.

*See April issue of AMERICAN GAS JOURNAL, page 38.—Ed.

Southern Gas Association Holds 40th Annual Convention

NEW OFFICERS OF SOUTHERN GAS ASSOCIATION

Left to right: Carl H. Horne, Alabama Gas Company, Birmingham, 2nd Vice President; W. H. Ligon, Nashville Gas and Heating Company, President; L. L. Baxter, Arkansas Western Gas Company, Fayetteville, 1st Vice President.

MORE THAN 1200 representatives of the natural gas industry, assembled at Galveston March 24-26 for the 40th annual convention of the Southern Gas Association.

Outstanding among many discussions held during the three day session was that of Chester L. May, vice president of Dallas' Lone Star Gas Company, who told the convention the industry faces serious and vital questions in reference to the liquid petroleum gas field.

"The number of LPG users in this country may eventually equal or even pass the number of natural gas consumers," May stated. If the gas utilities do not enter this field, he said, they should at least seek to give those in the LPG business the benefit of the long years of experience behind them in order to impress them with what is necessary to offer efficient and satisfactory service and with the tremendous responsibility they have assumed.

W. Lee Woodward, immediate past president of the Association, warned that higher natural gas rates to the consumer "are inevitable!"

"Rising operational costs make

price hike requests inevitable for some companies," Woodward pointed out.

Transmission engineers among the convention delegates heard Dr. Dan Noble, Chicago radio engineer, warn that the nation's defense program is being threatened by a pending congressional resolution designed to instruct the FCC on handling frequency modulation radio regulations.

"The adoption of the resolution will hinder mobile radio operations, a type of communication that will be vital to the nation's defense when the bombs start falling," Noble warned while discussing post-war developments in frequency modulation research that may in time lead to operation of pipelines by remote control.

He described and exhibited pictures of a new "handie-talkie" radio set, which is now in production, that will sell for about $250. Tests have shown that the set's efficiency is very high, even up to distances as great as 15 miles.

Dr. Paul C. Aebersold, chief of the Isotopes division, Atomic Energy Commission, spoke to the general session luncheon on "Atomic Energy as a Future Source of Power." He said there was no doubt that the energy of atomic fission will eventually find advantageous use in supplying electrical energy and heat. "Fissionable material is capable of releasing about three million times the amount of energy per unit weight as coal," he said.

New officers, elected at the meeting, were W. H. Ligon, Nashville Gas and Heating Company, president; L. L. Baxter, Arkansas Western Gas Company, Fayetteville, 1st vice president; Carl H. Horne, Alabama Gas Company, Birmingham, 2nd vice president.

Serving as treasurer during the coming year will be Lyman L. Dyer of Lone Star Gas Company, Dallas, while E. T. Anderson, Atlanta Gas Light Company will be Association secretary.

The 1948-9 directorate includes J. H. Smith, Peerless Manufacturing Company, Dallas; A. H. Weyland, Arkansas-Louisiana Gas Company, Shreveport, La.; H. K. Griffin, Mississippi Gas Company, Meridian, Miss.; John C. Flanagan, United Gas Corporation, Houston, and R. F. Hinchey, West Texas Gas Company, Lubbock, Texas.

Distribution Conference of American Gas Assn.

The Annual Distribution, Motor Vehicle and Corrosion Conference of American Gas Association was held April 19-20-21 at William Penn Hotel, Pittsburgh, Pa.

The usual luncheon conferences were held on Monday and Tuesday. H. W. Nicolson, Chairman, Distribution Committee, presided at General Sessions meetings. On Monday, D. P. Hartson, V. President, Equitable Gas Co., welcomed the delegates to Pittsburgh, an address by Hudson W. Reed, President, American Gas Association followed, and H. Carl Wolf, Managing Director of A.G.A., presented a message from the Association.

A general session meeting of the Distribution Committee was held Tuesday forenoon and a Motor Vehicle Symposium was held at the same time.

A general session meeting of the Distribution and Corrosion Committee was held Wednesday forenoon.

This issue of the JOURNAL was being closed as the meeting ended. A more detailed report will be included in the June issue, covering the subjects presented in papers at the meeting.

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Canada's Longest Owner-Constructed Pipe Line

By
R. G. Alison
Welding Engineer
Lincoln Electric Co. of Canada, Ltd.
Leaside, Ontario

THE LONGEST owner constructed pipe line in Canada has recently been completed by the Northwestern Utilities, limited of Edmonton, Alberta, from the town of Poe in Alberta, 98.5 miles, to the city of Red Deer. The Northwestern Utilities are producers and distributors of natural gas in the northern part of the province of Alberta, but they are not in the pipe line construction business. It was, therefore, with considerable pride that they reviewed the accomplishment of their own staff in handling this job from start to finish. Eight and six inch pipe were used in the line, which was designed to carry gas at a maximum pressure of 400 pounds per square inch and has a capacity of 490,000 cobic feet of gas per hour.

The line was laid at an average depth of 38 inches, and to dig the ditch 18 inches wide, two wheel-type ditchers were used. (Fig. 1) The right-of-way was cleared by three bulldozers, and the ditchers averaged through it approximately 200 feet per hour. The procedure in laying the line was to weld sections together and then follow with the ditchers. The pipe was loaded by side boom tractors onto trucks with trailers at the railroad siding, and then laid out on the right-of-way from these trucks. On the right-of-way, two side boom tractors were used to handle the pipe.

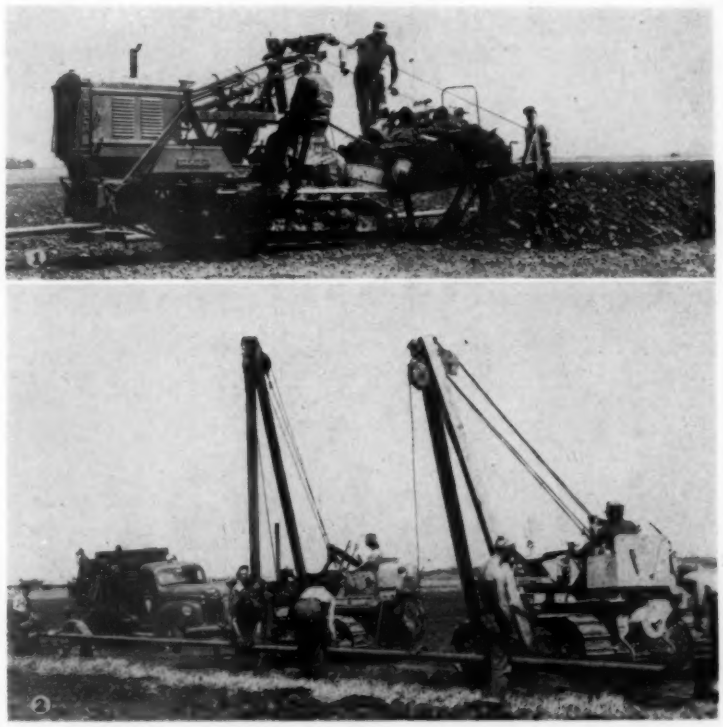

Fig. 1:—Wheel type ditcher of which two were used on the Poe-Red Deer line. Average depth was 38 inches and 18 inches wide.

Fig. 2:—Tack welding operations on the line. The two welders at the left make one bead at each joint.

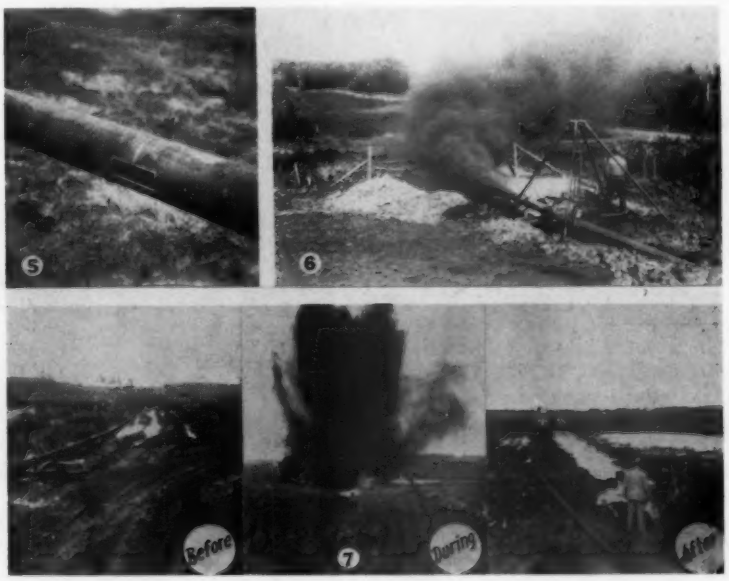

Fig. 5:—Shows where test coupon was taken.

Fig. 6:—Blowing refuse out of ten miles of pipe, using natural gas under its own pressure. A family of nine skunks was cleared out in one blow.

Fig. 7:—Composite picture shows how ditch was blasted through slough where equipment could not be taken.

Of the 98.5 miles of line there were 69.9 miles of eight inch pipe used and 28.6 miles of six inch pipe used. The specifications of the pipe were as follows:

Eight inch: 8⅝ inches OD, .188 inch wall thickness, 16.90 pounds per foot, Grade B, seamless, plain end, line pipe, in double random lengths, averaging not less than 45 feet, mill tested to 900 pounds per square inch. Pipe was beveled 30 degrees for welding.

Six inch: 6⅝ inches OD, .188 inch wall thickness, 12.89 pounds per foot, Grade B, seamless, plain end, line pipe, in double random lengths, averaging not less than 45 feet, mill tested to 1200 pounds per square inch. Pipe was beveled 30 degrees for welding.

The welding procedure consisted of lining up the pipe on blocks and holding the joints in line-up clamps.

Fig. 3:—Cleaning and priming machine on eight inch pipe.

Fig. 4:—Coating machine applying 9-inch width asbestos coating.

Two tack welders (Fig. 2) worked on each joint, welding the root bead from the top down, each man doing one side, using either ⅛-inch or 5/32-inch diameter electrode. A single follow-up welder was used to complete each joint, applying two beads with 5/32-inch electrodes and one wash bead using 3/16-inch electrode. For the entire job a total of 1250 pounds of ⅛-inch "Fleetweld No. 5" were used, 4250 pounds of 5/32-inch "Fleetweld No. 5" and 3950 pounds of 3/16-inch "Fleetweld No. 5."

Each operator was given a helper who cleaned the welds and assured the operator of an adequate supply of electrodes. Each operator had an identification number which he stamped on each joint he made, and one coupon per day was taken on each follow-up welder. The coupon was cut out across the weld from the pipe, as in Fig. 5. This shows the hole made after which the patch was re-welded into the pipe.

The welding equipment consisted of two 300 ampere and five 200 ampere portable units. One D2 Caterpillar tractor was used for moving welding units and two side boom tractors were used by the tacking crew. With this equipment the crew of seven welders was able to average for the entire job .80 miles per day. The maximum length of pipe laid in one day was 2.1 miles of six inch pipe.

After the pipe had been welded, removed from the blocks and the ditching done, the pipe cleaner and priming machine was moved along, applying a priming coat of standard pipe enamel and a wrapping of 9-inch asbestos pipe line felt. (Figs. 3 and 4)

One bulldozer kept up with the coating crew, backfilling at the rate of three to four miles per day after the pipe had been lowered into th ditch.

In laying this line one of the mor serious difficulties from the standpoint of the terrain was that of ditching the sloughs. Their swampy nature would not support any of the construction equipment, so it was necessary to lay the pipe ten to twelve feet to one side after being welded, cleaned, primed and coated. The ditch was then blasted with dynamite. Holes were made in the slough on 18-inch centers, placing 2-½ pound sticks of dynamite in each hole with the top of the stick approximately four inches below the surface of the water or mud. Approximately two-thirds of all of the dynamite was used per foot of blasted ditch and approximately a total of two tons were needed to make all of the slough crossings. (Fig. 7) The pipe was lowered into the blasted ditch by the side boom tractors

It was necessary to cross two rivers. At Battle River, near Ponoka, where the water gap was 95 feet, the bed of the river was ditched with a dragline. A section of the pipe was welded and coated, then two inch wooden slats were wired on to protect the coating. Heavy river clamps were bolted on and the section pulled into place by tractors. At the Blind

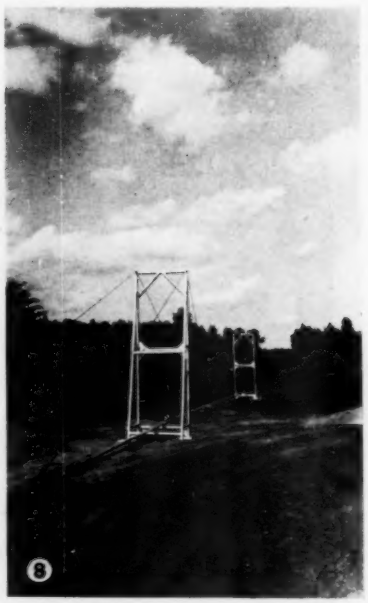

Fig. 8:—Suspension span at Blind Man River. Towers are of welded tubular construction.

Man River, near Blackfalls, where the water gap is 100 feet with much steeper banks, a suspension span was erected. The suspension towers are of all welded tubular construction. (Fig. 8.)

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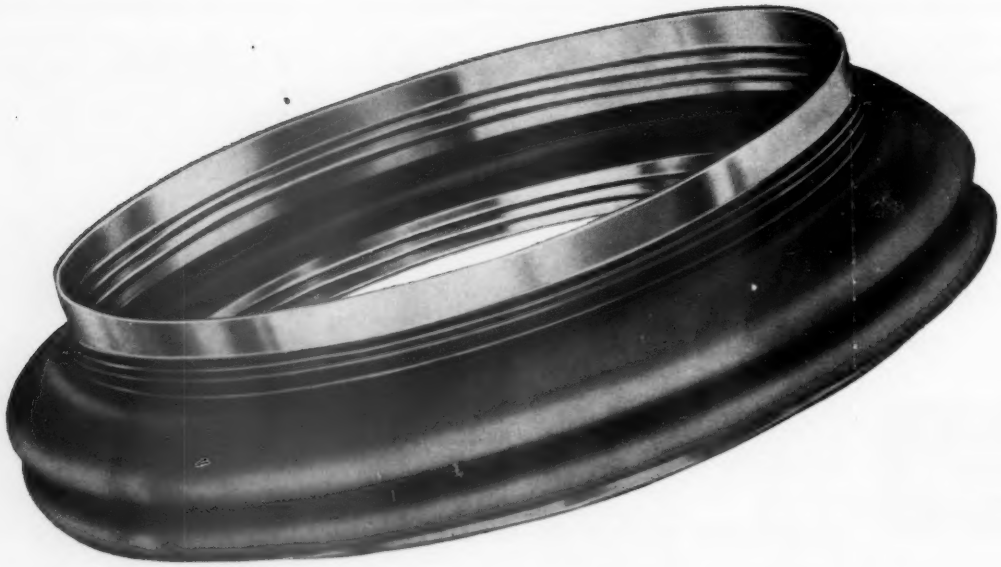

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Trained Engineers for An Expanding Natural Gas Industry

By

Frank H. Dotterweich*

TO SUPPLY the demand for technically-trained men in a rapidly expanding natural gas industry, Natural Gas Engineering was added to the courses offered by the Texas College of Arts and Industries, Kingsville, Texas, in September 1935.

This course was added to the Division of Engineering through the cooperation of the leading gas industries of the State of Texas. An Advisory Council, composed of leading men of the natural gas industry and led by Frank C. Smith, president of the Houston Natural Gas Corporation, pioneered the course through its early stages and through their efforts it has grown into one of the most complete Natural Gas Engineering Courses offered in this country.

The Texas College of Arts and Industries lies in the southernmost portion of south Texas, in the city of Kingsville, 40 miles south of the port of Corpus Christi and about 30 miles inland from the Gulf of Mexico. It was this location that played so great a part in determining the establishment of this Natural Gas Engineering course because of the immediate vicinity of one of the largest high-pressure natural gas condensate reserves of the nation, which gave birth to and supports many cycling, repressuring, refining and chemical plants within short range of the College. This course has been appropriately referred to as "a natural gas engineering school in nature's laboratory" in the May 1940 issue of the *American Gas Journal*. This article traced the development of the course from its conception date of September 1935 to a period just prior to the entrance of this country into the second World War. The following covers the continued growth and acceptance of its graduates by the natural gas industry.

The impact of war curtailed this work at the Texas College of Arts and Industries as it did in other institutions of its kind throughout the United States, for student enrollment decreased and a great number of the faculty moved to positions of more importance to the war effort. Although curtailed during this period, work was carried on and only during the year 1945 were there no graduates in Natural Gas Engineering.

Engineering Laboratory Buildings, left to right, Mechanical Engineering; Natural Gas Engineering; and Chemical Engineering.

Postwar Expansion

The return to peace brought an increased enrollment here as in all colleges and brought many improvements in the course. An adequate state appropriation, ease of obtaining surplus property and the loan of equipment by friends of the College saw the engineering equipment rise from a pre-war book value of about $25,000 to over a quarter of a million dollars as of August 31, 1947, with the expectation that this value would exceed one third of a million dollars by the end of 1948. This splendid increase in equipment, together with other improvements to date, were to a great degree the result of the help and encouragement given the Division of Engineering by a special Board Committee for Engineering Improvement composed of Lon C. Hill of Corpus Christi, Texas; A. Loy Sims of Sinton, Texas; and Frank C. Smith, Chairman of the Committee, of Houston, Texas. Also aiding in this work was the Engineering Advisory Committee composed of leading executives and engineers representing the major gas companies in the Southwest.

However, with the increase in enrollment and additional equipment during the post-war period, there were many problems encountered in the Division of Engineering. Chief of these problems was the replacement and addition of engineering faculty. The tight situation presently experienced in the natural gas industry in obtaining technical assistance is greater in the colleges because of lower salary scales in the colleges at the present and because of the severe competition with the petroleum and chemical industries during this period of their unprecedented expansion.

The return of the veteran has brought about changes in the college atmosphere with families in many instances outnumbering the younger set. The veteran is conspicuous also on the campus because of his seriousness and eagerness to learn and apply himself. This is the guarantee that many qualified, capable and mature men will soon be available to the natural gas industry.

Facilities on the campus include three laboratory buildings; a complete natural gas measurement laboratory; a natural gas production laboratory supplied with field installations; and a complete natural gas engineering process laboratory. In addition, the Natural Gas Engineer-

**Director, Division of Engineering, Texas College of Arts and Industries, Kingsville, Texas.*

ing students make regular trips to the oil and gas installations in the vicinity of Kingsville, the Stratton-Seeligson Fields containing one of the greatest high pressure natural gas condensate reserves known, to study current practices and to make their own measurements.

Curriculum

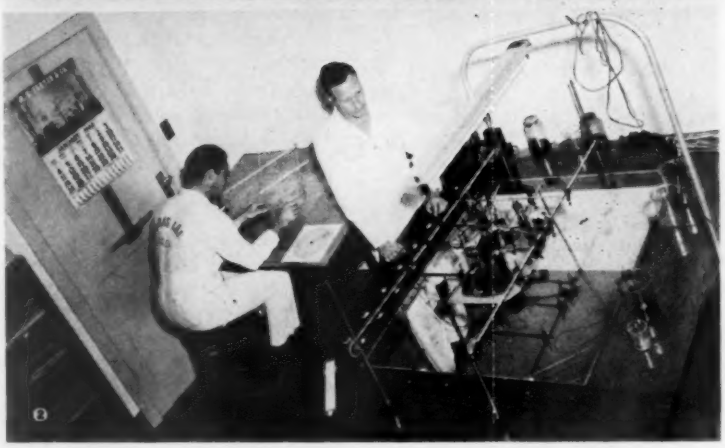
The Natlral Gas Engineering Curriculum at Texas College of Arts and Industries is believed to be a sound course covering the following: basic engineering courses common to all types of engineering; basic science and mathematics courses fundamental to engineering studies; humanistic and non-technical courses giving the students a rounded approach to social problems; and the specialized courses of Natural Gas Engineering. Specialized courses offered are: Gas Measurement, Gas and Fuel Analysis, Natural Gas and Condensate Production, Natural Gas Distribution and Transmission, Petro-Chem Processes and Combustion Engineering. These courses total 155 credit hours and, with the prerequisite for graduation of 12 weeks of summer employment in industry, add up to the equivalent of almost a five-year course which is offered and completed in four years.

The junior course in Gas Measurements is designed to cover all phases of gas measurement and regulation. The fully equipped laboratory allows the student to familiarize himself with and develop an operating technique on all equipment encountered from the well-head to a consumer's appliance. Special notes on gas measurement, combined with other available texts and materials, round out a very complete measurement program. The practical application and value of this laboratory equipment was demonstrated in part when an extensive study was conducted on flow beans to determine their coefficients of flow at the request of the Railroad Commission of Texas. These tests are summarized and available upon request from the Engineering Division of the College.*

The Gas and Fuel Analysis course, through lectures and laboratory demonstrations, acquaints the student with all phases of such techniques from the more common and simple pieces of apparatus through such complicated and specialized equipment as the low and high temperature Podbielniak columns and the Burrell adsorption fractionator. In this junior course the foundation is laid in Gas Analysis which permits the student, on encountering senior work, to master the senior work and become a qualified operator of such equipment.

Natural Gas and Natural Gas Condensate Production make available to the student a modern course in which such recent problems as those of cycling gas condensate reservoirs are covered. By including such modern problems and combining them with standard coverages, i.e.,exploration by geological, geophysical and geochemical methods; drilling methods; back-pressure tests and control of natural gas wells; hydrate studies; purification of gas, etc., a complete program is made possible. Such a program naturally is supported by prerequisites such as mechanical engineering and physical and organic chemistry. In addition to lectures throughout the year, laboratory work in both the laboratory and the field round out this production course.

The course entitled Natural Gas Distribution and Transmission is a combination of courses in Distribution and Transmission, which previously were given separately, and presents to the student a composite of theoretical and practical studies in these fields. Practical studies of extreme value are made possible by an extraordinarily complete laboratory, together with field trips to an ever increasing number of distribution and long-distance pipe line installations in the vicinity of the college. The latter subject is given special emphasis to allow the student to properly evaluate current trends in



1:—The Low Temperature Podbelniak Column is being studied by James Grimshaw, recipient of the Chicago Corporation fellowship, left; and right, Associate Professor Vandiver Mooney.

2:—Subsurface gas flow being studied by means of the electrolytic model table by Carl Wilson, presently of Sunray Oil Corporation.

the long-distance transmission of natural gas from the southwestern section of the country to the North, East and West.

Combustion problems encountered with all types of fuel gases, liquid fuels and solid fuels are presented in Combustion Engineering. Emphasis is placed on the fuel gases with attention directed to their production and various methods of utilization. Practical calculations relating to change-over procedures from manufactured gas to natural gas and liquefied petroleum gas are a strong point in this course, together with a complete coverage of burner design and installation.

Petro-Chem Course

The most modern and popular course in the Natural Gas Engineering Curriculum is Petro-Chem Processes. In this course, the processing of liquid and gaseous fuels is traced through the refinery with special attention directed to the latest procedures of polyerization, dehydrogenation, alkylation and isomerization. The chemical derivatives of natural gas are studied along with methods of their production such as oxidation, chlorination, decomposition and nitration. Modern applications of the Fischer-Tropsch Process, such as the Hydrocol Process, are studied from both the technologic and economic standpoint.

The foregoing special courses are supported by others such as Air Conditioning, Chemical Engineering, and basic courses in Mechanical and Electrical Engineering.

Natural Gas Engineering graduates in 1947 numbered 8; 16 are scheduled to graduate in 1948. Following them are 39 Juniors, 42 Sophmores and 52 Freshmen. The number of graduates since the first class in 1938 are as follows:

Year	Graduates in Natural Gas Engineering
1938	9
1939	13
1940	12
1941	17
1942	9
1943	7
1944	3
1945	—
1946	2
1947	8
Total	80

These 80 graduates have found employment in ten states with about 50 percent employed by gas utilities; 25 percent with production companies and regulatory bodies; and with the remaining 25 percent in private businesses and the chemical industry.

3:—Staff Meeting, left to right, Assistant Professors Korges and Livington; Professor Dotterweich, Associate Professor Mooney, and Instructor Hilbrich.

4:—Students at work in a section of the Natural Gas Production and Measurement Laboratory.

5:—"Punk" Boswell, Senior Natural Gas Engineering Student, studies a refrigeration unit.

Short Course in Gas Technology

One of the highlights of the natural gas program at Texas College of Arts and Industries for the past two years has been the annual Short Course in Gas Technology. Sponsored by the Southern Gas Association and presented by the College, it has, in both 1946 and 1947, attracted approximately 200 representatives of the gas industry from many states. Leading experts in the various phases of gas engineering have conducted lectures and class discussions. Field trips have been taken to gas production and utilization sites. Last spring the registrants toured the Lower Rio Grande Valley where gas-fired dehydration plants which are developing new uses for agricultural crops were examined.

Special problems in the production, transmission and utilization of natual gas will be featured in the Third Annual Short Course in Gas Technology to be held at the College June 2, 3, and 4. This year an inspection trip is scheduled to Corpus Christi and vicinity, in addition to other features of the Short Course such as a tour of the King Ranch and a Texas style barbecue at the Humble Camp.

This year the Natural Gas Utilization section of the short Course finds Carl McKinney, United Gas Corpor-

ation, as its Chairman; Vice-Chairman and Past-Chairman are Chester Young, Lone Star Gas Company, and George Elmer May, New Orleans Public Service Company, respectively. The Production and Transmission section has W. C. McGee, Jr., Tennessee Gas Transmission Company as Chairman; with D. T. MacRoberts, United Gas Pipe Line, and R. M. Hutchison, Houston Natural Gas Corporation, as Vice-Chairman and Past-Chairman respectively.

As previously noted, the work in Natural Gas Engineering and that of the Short Course has met with success chiefly through the help of the men of the industry. The Advisory Committee which is presently supporting and guiding the 1948 Short Course in Gas Technology is composed of men who in the past have given freely of their time. This Advisory Committee for the 1948 Short Course is:

Chester L. May, Chairman, Lone Star Gas Corporation

J. P. Bristow, Tennessee Gas Transmission Company

J. C. Flanagan, United Gas Corporation

A. D. Greene, United Gas Pipe Line Company

Frank S. Kelly, Jr., Arkansas Louisiana Gas Company

A. L. Kleberg, King Ranch

John Lynch, La Gloria Corporation

Harold E. Meade, New Orleans Public Service, Inc.

R. W. Reeves, Oklahoma Natural Gas Company

Frank C. Smith, Houston Natural Gas Corporation

Dean Strickland, United Gas Corporation

L. Vogelsang, Rio Grande Valley Gas Company

R. E. Wertz, Amarillo Gas Company

C. R. Williams, Chicago Corporation

W. Lee Woodward, Zenith Gas Company

C. H. Zachry, Southern Union Gas Company

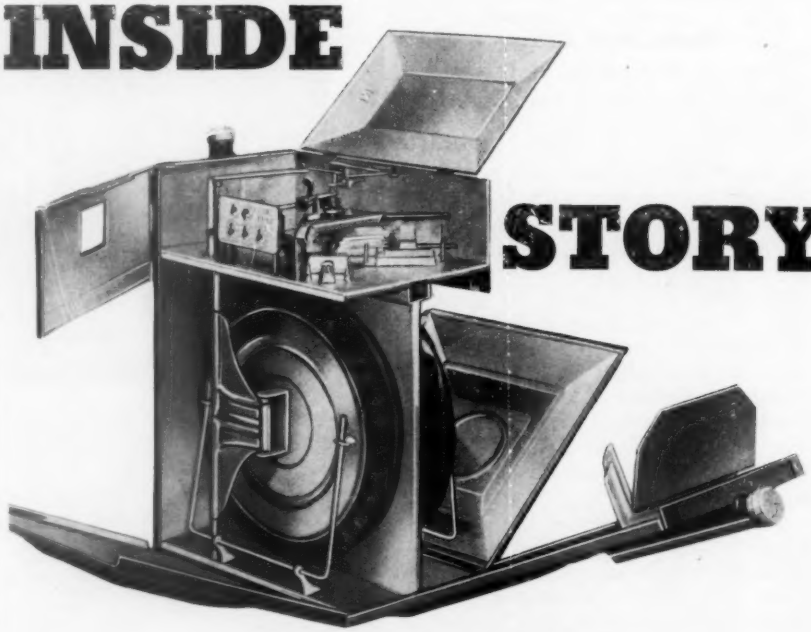
The foregoing program was designed to make available to an expanding natural gas industry the type of trained engineer required by an industry maintaining high standards of service. Only in such a way can the entire nation derive maximum benefits, directly or indirectly, by the use of the perfect fuel—natural gas.

More Steel Pipe in Sight

The Republic Steel Company recently announced that it plans to start production of large diameter steel pipe in July at its Gadsden, Alabama plant. Only three firms now produce large-sized pipe: A. O. Smith of Milwaukee, National Tube of Lorain, Ohio, and Consolidated Steel of Los Angeles. Among them approximately 100,000 tons of pipe are fabricated monthly. About 7,000 tons of this—most of Consolidated's output—are going to Arabia.

Contrary to popular belief, it is not a shortage of gas but rather a lack of steel pipe that has prevented the East and Midwest as well as the South from satisfying their own ever-growing industrial appetites for gas. In fact, Republic's new pipe mill represents the steel industry's first major concession to the oil and gas pipeline industries. Traditionally, only a small percentage of national steel production went into carrier pipe 18 to 30 inches in diameter. Before the war, this was enough. But in the last two years, demand for carrier pipe has mushroomed. With other steel needs also booming, the industry has been reluctant to allocate more plate to pipe production. But in the face of general fuel shortage conditions, the needs of the oil and gas industry had to be given prime consideration.

INSIDE STORY



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Use of Natural Gas to Increase Manufactured Gas Plant Capacity

By

R. E. Kruger

Superintendent Gas Operations
Rochester Gas and Electric Corporation

SOME THREE YEARS ago we started "playing around" with the idea of using Natural Gas in our franchise territory not to distribute it as such, but to mix with our usual manufactured gases. We didn't know too much about Natural Gas but the general feeling was that when Natural Gas comes into a new territory Manufactured Gas simultaneously goes out of existence in that territory and from that point of view we did not like Natural Gas.

We knew the analysis of Natural Gas and in general something about its flame characteristics and of course we had a fair idea, based on rather long experience and some careful research work, what we could do with our Manufactured Gases and we even had some fair ideas within what limits we could mix our various gases and still have these mixtures give satisfactory service in our customers appliances. Beyond that we had to start looking around and try to determine whether Natural Gas could enter our mixes and if so, to what extent and with what desirable or undesirable results.

First let me present Table I to show the analysis of our individual gases as we then made them and of Natural Gas as we understood it to be from our limited experience.

We had not made much carburetted water gas in the years just prior to 1946 and had not felt we were justified going into heavy oil operation so had been using an ordinary good grade gas oil; but there were signs that indicated a scarcity of gas oil in the years ahead and naturally enough "why not substitute Natural Gas for gas oil and have not blue gas plus oil gas, but blue gas plus Natural gas and still maintain a 540 B.T.U. Mixture?"

A moment's attention to the analysis of coal gas and carburetted water gas shown in Table I will indicate the presence of rather large percentages of CO and H_2; the Natural gas will show none of these but an abnormal percentage of CH_4 and some C_2H_6. It is of course well known that CO and H_2 are low B.T.U. gases but very fast burning and that CH_4 and C_2H_6 are relatively high B.T.U. gases but very slow burning. So it seemed that a mixture of Blue Gas and Natural Gas might work all right and there were even possibilities that Blue Gas and Natural Gas might have a far greater range of applicability than we had with Blue Gas and oil Gas (when we carburetted). A theoretical consideration too, attracted our attention, namely—a given amount of 285 B.T.U. Blue Gas will make a greater amount of furnished gas (say 540 B.T.U.) when Natural Gas is used as an enricher rather than oil gas. It works like this:

When using a good grade of oil 1000 Cu. Ft. of carburetted Water Gas is split into approximately

800 cu. ft. Blue Gas (285 B.T.U.)
200 cu. ft. Oil Gas (1560 B.T.U.)
1000 cu. ft. (540 B.T.U.)

A 540 B.T.U. mixture of the same blue gas plus Natural gas is composed of

66-2/3% Blue Gas (285B.T.U.)
33-1/3% Natural Gas (1050 B.T.U.)

In other words only 666 cu. ft. of blue gas are necessary to make a 1000 cu. ft. of 540 B.T.U. mixture, whereas 800 is necessary when using oil as an enricher. This means immediately a finished gas output on a given water gas machine amounting to about 20% and without having to bother with carburetted temperatures, oil tar and emulsions and oil handling. Naphthalene and gum formers. This looked interesting.

R. E. Kruger

TABLE I

Gas Analysis	*C.O.G.*	*C.W.G.*	*B.G.*	*P.G.*	*C.G.*	*N.G.*
CO_2	2.0	5.5	7.6	6.0	2.7	0.0
Ill	4.0	9.0	0.0	0.0	3.3	0.0
O_2	0.0	0.0	0.0	0.0	0.0	0.0
CO	6.5	32.5	36.0	27.0	10.2	0.0
H_2	52.0	37.0	46.0	13.5	45.0	0.0
CH_4	33.5	12.0	2.0	.4	27.5	95.4
C_2H_6	0.0	0.0	0.0	0.0	0.0	4.6
N_2	2.0	4.0	8.4	53.1	11.3	0.0
B.T.U.	630	540	285	135	540	1050
Sp. Gr.	.392	.658	.589	.880	.481	.577

Note:
C.O.G. = Coke Oven Gas
C.W.G. = Carburetted Water Gas
B.G. = Blue Gas
P.G. = Producer Gas
C.G. = C.O.G. + P.G. = Coal Gas
N.G. = Natural Gas

Paper presented at meeting New England Gas Assn., Boston, March 18-19, 1948.

Be Certain Contemplated Mixtures Will Work

In final analysis when considering changing gas compositions one must know for certain what contemplated mixtures will work on the customers' appliances and what and where are the border lines between acceptable and non-acceptable mixtures. This we feel is of prime importance regardless of all brilliant theoretical considerations and in spite of most economic evaluations. It's not to our credit to render inferior service as we "advance" in our art or profession.

With these very few and simple promises we started to work. We as-

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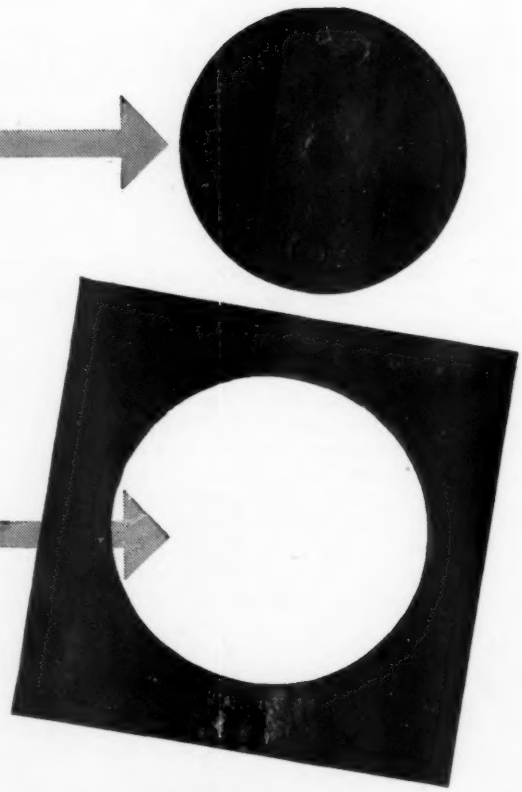

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Stacey Brothers TANKS

sembled in our laboratory a series of domestic appliance burners; made all our gases as we had made them for years available in the laboratory and apparatus for mixing, sampling and analyzing any of those primary gases and all mixtures and lastly we put on the project a man who really knew what it was "all about" from every angle and let him go to work.

Testing Blue Gas Mixtures

We tested and retested scores of mixtures of blue gas, or blue gas modified by blow run and blast purge, and Natural gas on these appliance burners to determine where lay the borderline of interchangeability and to determine further-more what to expect after that border line was crossed. We checked and rechecked these results and when we were all thru we knew just about what we could do. In summary these are the conclusions:

1. A mixture of modified blue gas including blow run gas or blast purge gas (230 B.T.U. or higher) and Natural Gas (1050 B.T.U.) having a 540 B.T.U. value is perfectly interchangeable with our coal gas in Table I.

2. Blue Gas having a value of less than 230 B.T.U. tends to give a flame so "hard" that it will lead to customers dissatisfaction.

3. The same 230 B.T.U. blue gas can be enriched with the same Natural Gas to about 620 B.T.U. and will still give complete satisfaction.

4. Beyond 620 B.T.U. the mixture flame becomes too "soft" and tends toward a sooty condition.

5. Any such mixtures between 540 B.T.U. and 670 B.T.U. are perfectly interchangeable.

Before leaving blue gas operation let me say a bit about blue gas plant operation as far as we are concerned in Rochester. By making a 230 B.T.U. gas, by divorcing ourselves from oil gas making, by using a higher blast pressure and by putting more steam per unit of time into our generators and by cold enriching with Natural Gas, we can about double our former Water gas capacity and furthermore we don't yet know what is our ultimate finished gas capacity. This is all on basis of 540 B.T.U. finished gas. The additional gas coincident with a higher B.T.U. (up to 620) is above and beyond this.

What additional capacity the other fellow can get depends upon how near to ultimate capacity he now is and in any case he can well afford to look into the matter. I really believe we have "just got started" to get capacity out of our blue gas machines. Certain theoretical considerations support this reasoning and some small pieces of research work indicate that reasoning to be on the right track.

In brief summary, a water gas producer by using Natural gas as a cold enricher can do everything he could formerly do where he produced his own oil gas and do it a lot better and greatly increase his plant capacity. (In our case nearly 100% increase resulted.)

If he wants something a bit different from his normal operation he can reform Natural Gas and thus obtain a blue gas substitute which when enriched with Natural Gas will serve his purposes just as well.

Use of Natural Gas in Coke Oven Operation

Let's now turn to the use of Natural gas in coke oven operation. As you all know this is a straight line operation and the line must be on the ceiling else you can't afford to operate ovens. In other words, coke oven operation is base load operation—"full-tilt" ahead and no flexibility; and in most coke oven plants there is no difficulty obtaining a 540 B.T.U. output gas. So what's the need of using Natural gas unless perchance a B.T.U. higher than 540 is required?

In our case, we took this apart a bit by resolving coal gas into its two main components, namely coke oven gas (B.T.U. 630) and producer gas (135 B.T.U.). We had been making coke oven gas for years and adding producer gas to it to obtain a mixture having a 540 B.T.U. value. This gave us a relatively inflexible output of roughly 15.5 MM/day. But we reasoned—why shouldn't it be possible to add more producer gas to our coke oven gas and thus bring the mixture B.T.U. somewhat below 540 and then bring it back up to 540 by adding Natural gas? This was so intriguing that we tried it. It was particularly intriguing because additional producer gas capacity meant only an increase in producer fuel used per day. It meant, at least up to some point, no additional labor, no additional investment and no new method of operating either the coke ovens or the producer plant.

We "pulled" the coke oven gas and producer gas mixtures down to 364 B.T.U. before we hit the border line of appliance interchangeability. (That is when we re-enriched this mixture to 540 with Natural gas we were just on the border line.)

The test work was done exactly as previously outlined under blue gas operation and, as in that case, we can add enough Natural Gas to bring the heating value to 620 if we s choose.

Results

Here are the results. Our maximum finished gas capacity (from ovens and natural gas) is about 31.0 MM/day (540 B.T.U. or double our former capacities and we can go down from a rate of 31.0 MM/day to 15.5 MM/day or even to 12.8 MM/day in about 30 minutes notice and we can usually go in the reverse direction in about two hours. And of course, we can stop at any intermediate point when going in either direction. We have then in our coke oven operation between 128 MM/day and 31.0 MM/day the same flexibility we have in a water gas plant of 18.2 MM/day capacity. Let me say that altho the limit of producer gas addition to coke oven gas is a mixture of 364 B.T.U. value we have set as our limit a 380 B.T.U. mixture for the reason that it is not good business to "hew" too close to the line—some leeway must be allowed the operating personnel. The capacity figures given are based on 380 B.T.U. mixture enriched with Natural gas to 540 B.T.U.

There is no change in the coke oven operation at all. The producers gas output however, has been materially stepped up, in fact it has been practically doubled. This has been done as follows: We increased the blast pressure after we increased the seal depth on our Kerpely producers and on some machines we installed an ash removal device of our own design that insures a more uniform fuel bed over the producer cross-section. We have not materially changed our producer fuel composition. The average screen analysis for January 1948 when operating under peak load conditions is given as an example. On ⅝" - 26%, ½" - 12%, ¼" - 22%, ⅛" - 16%, 1/16" - 13%, thru 1/16" - 11.

It can be seen at once that this is rather "lousy" producer fuel, but it has given us all the gas we need and a fair margin to spare and if something goes seriously wrong we can within a short period improve the quality of the fuel and be on our way toward even greater capacities.

The reactions in a producer and in a blue gas machine are essentially the same and so, as we said, we didn't know the ultimate capacity of blue gas generator; we want to say also, we didn't know the ultimate capacity of a producer. There's still a lot to be learned about both operations and the

sooner we learn the better we will be able to intelligently meet the very heavy loads that stare us squarely in the face.

All of these gas mixtures embraced in this flexible coke oven operation are perfectly interchangeable on customer appliances with the base gas (coal gas) shown in Table I, and it is very largely brought about by the intelligent mixing of low B.T.U. — fast burning gases with high B.T.U. slow-burning gases. Furthermore, any of these mixtures can be added to the blue gas—Natural gas mixtures discussed before and the final mixtures are perfectly interchangeable with the base load gas, namely, coal gas.

All the foregoing, both blue gas and coke oven operation, cover not a lot of theoretical considerations, in fact few purely theoretical considerations are involved. Neither does it cover a lot of idealistic reasoning leading to wishful thinking but a very brief summary covering actual plant operation over the past 16 months including all loads on our lines, both last winter and the current winter season. It has proven itself perfectly feasible and the best part of the whole procedure is that the customer has not known the difference except generally speaking his service is more satisfactory, particularly during peak loads, than it has ever been before and that for Rochester is saying a "mouthful." In general summary we are using this experience as a basis for our future planning.

In the Right Direction

By working along these lines, we set in motion a whole chain of conditions which seem to us to be in the right direction for the manufactured gas industry.

We keep our plants intact, including our operating organizations; and we so modify our operations and add to them as we learn to intelligently fit them into the many changing conditions that lie at our doorstep as well as those that are coming our way from out of the mists of the future. Oil supplies are critical and stand a fair chance of being more so in the future, in addition, oil quality is decreasing. We are already compelled to crack oils that even five years ago we declared could not be cracked any further and this situation will very probably get worse. Those of us who choose to stay in the oil cracking game must learn how to meet these new conditions and they can't learn by shutting their operations down and go to Natural Gas. To do this smacks of defeatism. If we all went to Natural Gas it would mean stagnation for the Manufactured gas industry and as a corollary it would mean lying down to die without a fight and then after a couple of decades when Natural gas is less plentiful or nearing exhaustion what a mad scramble there will be to pick up the inadequate "loose ends" we dropped two decades previous.

Heavy loads, loads we never dreamed of, stare us squarely in the face and I guess we "ain't seen nothing yet." It seems reasonable that we meet those loads not by throwing everything overboard and ride a plank—Natural Gas—to a temporary haven. There has been in the manufactured gas industry a continuity of satisfactory service unparalleled in industrial America. This, our able predecessors did by intelligent planning involving always a look into the future and then supplying the necessary equipment, the necessary manpower and training it and the necessary materials to meet those forcasts and a bit more. This has been practiced for a long, long time. This record of continuous satisfactory service to our thousands of customers is a priceless legacy we have the good fortune to inherit. It seems that we should so honor this inheritance that when our small part will have been done, our followers will inherit from us something a bit better than that which we inherited. Else there will have been small reason for our coming this way.

Natural Resources

I mean that what we pass along should involve an intelligent use of manpower, equipment and especially the use of our natural resources. It is high time we took a look at the latter. Oil and Natural Gas are preferential made for the transmission of energy and compared with coal the supply of each is very limited. No figures need be quoted, you all know them. It does seem reasonable then, we should commence to conserve these priceless Natural resources by some means, probably by substitution in part. If we can devise for example a system of substitution making it possible to have our reserves of Natural Gas supply our needs for a much longer period than we now think they will last, it seems that would be a step in the right direction and a distinct accomplishment we can proudly pass along to those who follow.

As far as the manufactured gas industry is concerned, I think, and furthermore I know, it can be done and at least a good approach is that which I have already outlined. You need only to remember that if, for example, you have a send-out standard 540 B.T.U. to meet you can make up that B.T.U. requirement by using the proper mixture of a 360 B.T.U. gas, that you can make in your own plants and Natural gas you can buy from the other fellow. In volume relationship you furnish 74% of it and the Natural Gas man furnishes the other 26%. In therm relationship you furnish 49.4% of the total and he furnishes 50.6%. This seems like good business from the point of view of the manufactured gas man and his plant personnel and in the end should be good business for the natural gas man from the point of view of the coal producer, from the point of view of the railroads, and from the point of view of those who are interested in National conservation. The manufactured gas man shouldn't be too hard put to make a 360 B.T.U. gas and if he has a bit of trouble let him solve it. It will act as a stimulant; certainly we are not comatose. When the available Natural Gas supply begins to dwindle he should be ready to make artificial methane to take its place. In fact he can make it now, but what's the use; Natural Gas is methane; why make it when you can buy it cheaper? But we ought to find out all we can about improving its present manufacturing technic. When we use Natural Gas in this way we are not doing anything new. We've worked the same system with the oil industry for decades every time we make water gas and there is nothing to prevent anyone from continuing to do this in this setup, providing oil of a sort that can be used is available.

You have the choice of making your high B.T.U. gas constituent from oil or buying it from the Natural gas industry or both. In all cases you keep your plant and run your own business and in that way provide a very reasonable guarantee of the satisfactory service record our predecessors passed along to you. It seems that record will be on very soggy ground when you turn this responsibility over to the natural gas man with his lone pipe line over which you have no control. There is, I think, a definite trend toward the retention of existing manufacturing facilities in a given municipality and even a hint that they be definitely enlarged to meet anticipated loads.

By-Passes Conversion Problems

A system of this kind by-passes the problem of converting from manufactured gas to Natural gas. Incidentally, by conversion, our fine service record gets a bad "kick in the teeth" at the very outset, because not all the manufactured gas appliances can be satisfactorily converted to Natural. Some few can be converted only at enormous expense.

In general therefore, for serving the far greater portion of our system we feel that a higher thermal value, involving conversion, should be adopted only as a last resort. On the other hand we shall take advantage of the highest thermal value our appliances will permit when loads on our distribution make it necessary to do so. This involves no change in the customer appliance and insures complete customer satisfaction. We have had considerable experience in conversion of appliances and at best it is a difficult task.

This method of operating keeps our plants in operation, forces us to keep abreast of all developments relating to gas production and gas distribution, thus getting ourselves ready for the time when natural gas will not be so plentiful and in this way avoiding the expense of conversion.

Conclusions

Last, but by no means least, what does the future indicate as far as the manufactured gas part of this scheme is concerned?

1. There is a fruitful field for capacity studies and research in blue gas machine operation and producer operation. This field is still wide open.

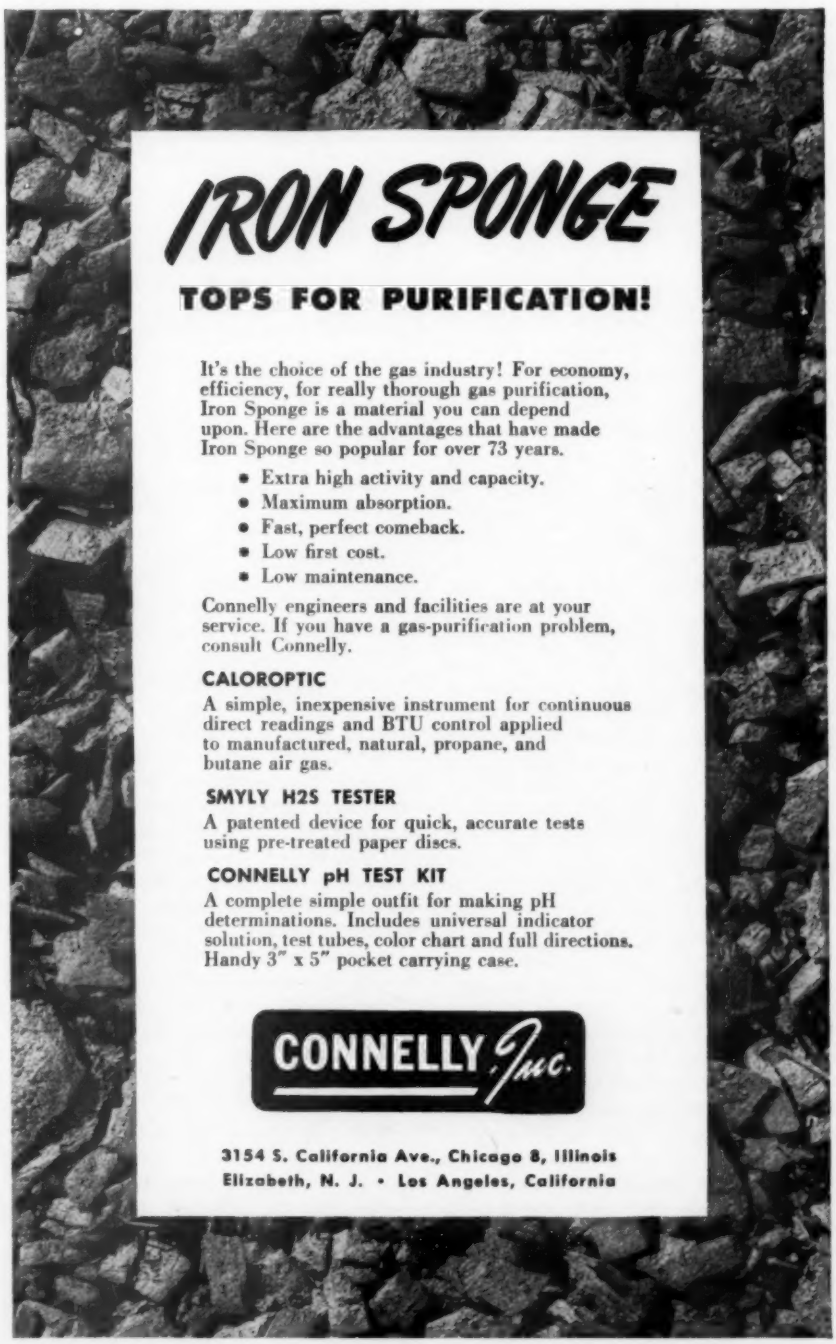
2. Those who wish to continue water gas operations have the dual and complex job of increasing blue gas capacity simultaneously with the handling of a much more difficult oil in larger volumes per unit of time. This job may lead to even radical equipment design.

3. The system outlined in this paper involves the use of producer gas—a gas high in Nitrogen content. Obviously this Nitrogen as far as we know, serves no useful purpose, either in the manufacturing system or the distribution system. By substituting oxygen or oxygen enriched air in producer blasting, we can largely rid ourselves of the Nitrogen with an incidental B.T.U. increase of the output gas to 300 B.T.U./cu. ft. as a limit. This obvious two-pronged advantage should be thoroly investigated before we get too much further along. There is a decided advantage in mixing coke oven gas and blue gas and then re-enriching with Natural gas.

4. When oxygen is used in a blue gas generator its operation becomes continuous and should point toward increased capacity of considerable magnitude. It is obvious that when oxygen is used there will be no difference between blue gas operation and producer operation.

5. We should be laying our plans for getting at least a relatively low B.T.U. gas (say 350 B.T.U.) from coal direct in one operation. We already know a lot about this matter, but we need to make some changes in our general thinking. The production of such a gas should be made in equipment having much lower capital cost.

We should direct our research programs so that we keep ourselves thoroly abreast of developments and at the same time lend a hand in bringing about new developments within our industry. This takes courage, vision, technical abilities and money and above all a unique ability on the part of a few, to thoroly knit all these into a reasonable research program that will benefit our industry, as we go along.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Southern Union Gas Company System

An Outgrowth of Several Pioneer Projects Operated Under Consolidated Management

By

C. H. Zachry

President

MOST of us remember the year 1929 as the last year of the good times of the 20's, as well as the beginning of the great depression of the 30's. In Southern Union Gas Company, however, the date has extra significance; it was the birth date of the Company.

Early in January, 1929, Southern Union Gas Company was incorporated but in order to get a better picture of its origin, it is necessary to go back some months prior to the charter date.

In 1928, a small group of Dallas oil men were operating in the oil fields of west Texas. In order to market their new oil production in Winkler County, Texas, plans were made to build about 20 miles of oil pipe line to an available tank car siding. After a small portion of the line had been constructed, however, local conditions changed unexpectedly, which resulted in the oil pipe project becoming unnecessary and undesirable. With the undaunted spirit of Texas oil men, this group decided that some constructive use could be made of the pipe line. A town called Wink had sprouted almost overnight in these teeming oil fields. While the community was quite typical of oil field boom towns, in that it was an aggregation of buildings, shacks and even tents, it was humming with the activity of newly discovered and developing oil resources. Since large reserves of natural gas had also been developed near the route of the projected oil line, arrangements were made to re-engineer the line for gas transmission and to initiate local gas service in the town of Wink. Not being gas operators, the group employed technical consultants and the resulting gas system was a sound operating success. Some of its earlier records have not survived, but recollection fixes the maximum number of customers served at something over 500.

With this experience in the public service, the group of men next received a call from some small communities in north central Oklahoma and such call was answered by providing a new water supply and by constructing gas transmission and distribution systems for three towns. The group then began looking around the great Southwest, where they found numerous areas, of varying distances from natural gas sources, where the benefits and advantages of natural gas service had not been made available to the people. Engineering and technical investigations were made as to the sufficiency of the gas reserves and feasibility of the projects. Since the people in each of these widespread communities had not previously had gas service, they also were enthusiastic in their desire for natural gas.

Thus, as the year 1929 opened and Southern Union Gas Company was created, its principal initial assets were the two small projects already mentioned plus the vision and resources of its founder group, all leavened by the high optimism of the times. The fledgling company promptly embarked upon a series of projects designed to bring natural gas service to an aggregate population of over 200,000 living in fifty odd communities in five southwestern states. In a brief space of the next two years there were constructed and placed in operation gas transmission and distribution systems in six towns in northwestern Arkansas; for five additional towns in central Oklahoma; for nine towns in central and southeastern Texas; for five additional towns in west Texas; for twelve towns in eastern and southeastern New Mexico and for six towns in northwestern New Mexico and Colorado.

Organization of Properties

This era of growth and expansion, remarkable as it was from comparative beginnings, was rendered no less remarkable by the fact that the personnel to plan, build, operate and supervise the scattered properties also had to be assembled and organized. General offices and headquarters were set up in Dallas, where

C. H. Zachry

they have since remained. While a liberal use of consultant and technical services assured construction in accordance with the best engineering practices, a team of employees was quickly evolved, working closely together. It is quite significant that a substantial number of these early employees are still with the Company, functioning at levels of high responsibility.

Both as a result of these numerous construction projects and in order to make their financing possible, Southern Union Gas Company rapidly became a complex system of over twenty subsidiary and affiliated corporations. Frankly, the corporate and financial structure was involved; but it had provided the means to accomplish widespread pioneering and progress in the public service. In the grim days, however, of the major economic depression which almost immediately engulfed the nation, the new company and its new business had to fight a battle for survival. Success in that battle must be credited to the fundamental strength and growth of the territories served; to the sound construction and careful operation of the Company's properties; to the cooperation and faith of its security holders and investors; and to the tenacity of the men directing the Company's course. Some of the interesting highlights in each of these contributing factors will be briefly pointed out.

Map of Properties of Southern Union Gas Company.

Construction Work

During the period of initial construction of properties, approximately 1,000 miles of medium and small size transmission lines were laid. A large variety of terrain was crossed, including rice fields of the Gulf Coast area, the rugged hills and rivers of northwestern Arkansas, the barren prairies of west Texas, the highly developed irrigated belt of southwestern New Mexico and the vast waste lands of the Rocky Mountain area.

Perhaps the most novel construction problems were encountered in the project involving a ten and twelve-inch line constructed from the San Juan County gas field in northwestern New Mexico to the cities of Albuquerque and Santa Fe. This was the first pipe line to cross the Continental Divide, that rugged backbone of the continent. Between the gas field and the towns lay about 200 miles of Indian reservation lands and uninhabited public domain. The then existing roads were primitive, being more nearly trails than highways, and available maps of the projected route were of doubtful authenticity. The area was one of altitude and temperature extremes, of rock and sand, all criss-crossed by savage arroyos which are the dry scars of water in an arid country. In spite of the formidable known and unknown features, however, the line was completed in a four-months' schedule, without the advantages of modern type mechanized equipment.

For instance, the right-of-way was laid out by sighting from one topographic feature to another, and then detailed by dropping, from an airplane, welding rods tipped with flags. All pipe and equipment used on the western slope of the divide had to be trans-shipped to a narrow gauge railroad in Colorado and hauled across the spectacular Cumbres Pass. An interesting side-light on construction conditions is recalled by the incident when lack of water forced a shutdown of acetylene welding operations. Though a solid welded line had been intended, construction was carried on with Dresser couplings, and this coupled section of the line is still in operation. Much color was added to the construction project by the Indians, many of whom worked on the construction crews, but some of whom had an overwhelming penchant for sundry pieces of equipment. Their most vivid contribution was made one night by a mild demonstration of marksmanship in the shooting up of a cabin, during which operation those resident therein were very prone on the floor.

Suffice it to say that with the passage of nearly twenty years, this area has become much more accessible. The Company's own road and telephone system, as well as first class highways have relieved its remoteness and there are even a few hardy souls homesteading in the more likely spots up and down the line.

Altitude Problems

In the field of operations Southern Union Gas Company has, of course, faced many problems, some of which were unique, but many of which were shared with the industry in general. Most of these past problems, as now viewed in retrospect, appear very simple. For example, there is the former problem of high altitude combustion, which was of particular significance to the Company since the greater portion of its properties were located at altitudes from three to over seven thousand feet. When early customers consistently reported performance difficulties with the best grade of appliances, urgent conferences were had with the manufacturers and other technicians. In a brief space of time, the now obvious fact became apparent; that in high altitude combustion in-put ratings for most consumer appliances have to be materially reduced. A large job of appliance adjustment immediately followed and appliance efficiency thereby obtained now compares favorably with low altitude performance.

Another historical problem, of complete present simplicity, was overcome in the struggle with hydrate formation. The early and trying days of bonfires over the critical places in the lines can now be recalled without apprehension.

Pipe Line Maintenance

Strangely enough it was water in the arid and semi-arid country served that presented some of the most difficult situations. In the low places along the pipe line, severe corrosion was encountered from the local dampness until wind-driven cathodic protection could be installed. For the flash floods and torrential rains which occasionally occur, however, no defense has been evolved except that of constant vigilance. The slightest break in the top soil, or for that matter merely a rock lying on the surface can result in the space of a few

minutes in the cutting of a new arroyo and exposing hundreds of feet of pipe line to the rushing water. Line riders continuously patrol the lines on horseback, not so much to detect leaks as to carry on preventive maintenance against such floods.

River crossings (which in much of the territory means a generally "dry" gulch) were initially constructed with multiple buried lines. Here again, the suddenness and force of the intermittent flow gave operational difficulties, and Company designed suspension crossings have since been built in many places. These are up to 700 feet in length.

$350,000 MEA (treating plant) Barker Dome, northwest New Mexico.

Customer Growth

New business and promotional efforts have always constituted important phases of Southern Union Gas Company's operations. Beginning with a grand total of 14,800 direct and indirect meters served, customers have been developed so that the present properties now serve over 78,000 meters, including some 51,000 directly. Growth on such a scale must be attributable to the development and expansion of the territories served, which have practically doubled in population during the last fifteen or twenty years. Because the communities served are well located in the southwest, where the spirit of progress and improvement is a basic philosophy, a continuation of this trend of development and expansion is indicated.

The aggressiveness of the Company, however, in selling and service has likewise been significant as to the growth factor. The Company's slogan, in both thought and action is: "Helping Build New Mexico and West Texas." Cognizant that the natural gas service requires not only adequate and consistent service attention, but also high quality appliances, much effort is directed to merchandising activities. Until the period of war shortages and restrictions, the Company maintained an active sales force with technical and engineering assistance, and also repeatedly enlisted all of its operating personnel in sales and service campaigns. In 1947, without a full return to normal supplies, Southern Union Gas Company had appliance sales of $1,088,000. Greater sales are anticipated for the current year.

A somewhat unusual type of customer has been developed by Southern Union Gas Company in the old artesian water region of southeastern New Mexico. This area is intensely cultivated and was dependent on artesian water supplies which were seriously declining due to excessive use. The Company extended lines out into the suburban areas 15 miles and more, and by the installation of originally, old automobile engines and subsequently, with more modern power plants enabled the farmers to pump adequate water from lower sands, using natural gas as fuel. This gave the Company a very considerable summer gas load with a most favorable load factor.

Treating Plants

Turning next to the more technical phases, Southern Union Gas Company has two treating plants in operation. One is an iron oxide treater in part of original Company design, in which continuous proportionate air injection into the sour gas stream is utilized to rejuvenate the treating material. This was originally designed for 40-grain gas, but is still operating efficiently on gas with 900 grains of hydrogen sulphide.

The second treating plant, of 25-million feet capacity, and using the Monoethanolamine process, has been completed since the war. Gas put through this plant contains substantial hydrogen sulphide and in addition about 15 percent of CO_2. Both substances are eliminated in the single process and operation. It is the incidental use of this plant, however, that is somewhat unique. The plant is located in the Barker Dome* gas field of northwestern New Mexico, in which there is a partially depleted sand at approximately 2500 feet. Subsequent deep drilling developed very large reserves of high pressure, sour-CO_2 gas at about 9,000 feet. Therefore, the plant is operated at as nearly 100 percent load factor as possible and the excess treated gas above pipe line demands is repressured (without necessity of compression) into the shallow gas sand reservoir. This operation has two important results: First, to allow the most efficient continuous operation of the treating plant and second, to provide additional volumes of sweet gas capacity in the field as a long term reserve and also as protection against dependence of the pipe line on plant operations with the attendant danger of mechanical interruptions.

For description see American Gas Journal, August, 1947, p. 34.—Ed.

Repressuring

The first repressuring project of the Company, being in the old Keyes Field in southeastern New Mexico, has been an outstanding success. It is a simple off-peak injection, unique only in the fact that it represents one of the first repressuring projects on Federal lands under the Federal lease forms. Located near the center of a transmission system serving several towns, this small repressuring set-up has carried as much as one-third of the peak day loads. The indicated savings are substantial.

Reserves

In the matter of gas reserves, we find a phase of operations in which Southern Union Gas Company has been extremely active and successful. Its properties are located in a broad area of current oil and gas development; and having already been on the ground, so to speak, the Company was able to obtain some initial advantage in acreage holdings. Its program of oil and gas exploration, using all advanced geophysical processes, is now one of its most important activities. Based thereon, interests of over one quarter of a million acres of oil and gas leases have been

acquired. Three drilling rigs are owned, including one of the most modern, heavy duty types, capable of drilling to depths of 12,000 feet. Ten producing gas wells were drilled in 1947 and other important deep tests in new areas are now drilling.

The situation of the Company, both as to immediate and long-term reserves of gas is the most favorable in its history and is being further improved as time goes on. For a portion of its properties, gas is purchased from major pipe line companies, such as El Paso Natural Gas Company and West Texas Gas Company. As to the remainder of its properties, the Company through a wholly owned subsidiary, is primarily its own supplier, though it has always maintained a policy of encouraging development by other operators. Connections to and prorata take from third party wells are effected whenever possible. Formerly some complications were encountered in areas where there was a peculiar diversity of land ownership and regulation, in that the Federal government, the state government and private individuals all owned tracts. The early divergencies in regulatory ideas have been solved so that now entire fields are efficiently developed and operated as a single unit.

Corporate Status

In the relations with its security holders, Southern Union Gas Company has always enjoyed the highest degree of cooperation. By a series of voluntary mergers, the numerous small companies, which had been created in connection with the initial construction of properties, were combined into strengthened corporations. The final and most important of such consolidations was effected in November, 1942, at which time the principal subsidiary companies were all united into a single operating company, to wit: the present Southern Union Gas Company.

During this final consolidation, the Company had to meet the technical, geographical provisions of the Public Utility Holding Company Act. In compliance with such Federal Regulations, the Company was required to divest itself of certain properties in Oklahoma, in Arkansas and in southeastern Texas. Therefore, the Oklahoma properties were sold. Divestment of the other two properties, however, was effected by distributing the stock thereof as a dividend to the shareholders of Southern Union Gas Company. At about this same time, the Company was able to purchase the gas distribution system serving El Paso, Texas, thereby adding some 17,000 meters and substantially offsetting the effect of the government directed property dispositions.

This series of complex, but far-reaching corporate and financial transactions enabled the Company to comply with all regulatory standards and to re-capitalize itself on a favorable and constructive basis. Stockholders who had seen a 1930 investment of $25.00 per share go down in price to about $1.00 per share during the dark days of the depression have, since 1942, seen the value of their initial investment almost doubled. Many stockholders went without dividends for a period of nearly twelve years, but since 1942, have received regular cash dividends, currently at the rate of 70 cents per annum. In addition, they have received stock dividends and stock purchase rights whose present value is over $20.00 per share of Southern Union. These special dividends included the shares of Arkansas Western Gas Company, the shares of Texas Southeastern Gas Company, plus further shares of Southern Union Gas Company. The stock rights distributed covered the shares of Delhi Oil Corporation and of Barker Dome Oil & Gas Company. All of these corporations were one time subsidiaries of Southern Union Gas Company and their respective securities have enhanced in value. Particularly is this true as to the Delhi Oil Corporation and Barker Dome Oil & Gas Company, whose stocks increased in value very materially with the subsequent development of their oil and gas leasehold interests which had been vested in them by Southern Union Gas Company prior to the distributions.

Southern Union has recently issued its 18th annual report, covering the year 1947. This report reflects some $23,000,000 of integrated properties serving nearly 77,000 consumers in 29 towns of New Mexico and west Texas, with operating revenues of about $6,500,000, all owned by 3,000 odd stockholders. The Company is proud to be a small segment of the great natural gas industry, which by service has come to a position of basic importance in our national life and economy. This is the industry which in the last ten years has seen an increase of over 90 percent in sales and revenues and an increase of over 50 percent in customers served, yet today stands on the threshold of accelerated accomplishment with a program of expansion to provide for the unprecedented and still growing demands for its service.

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W. G. H. Russell, left, manager of the Southern California Gas Company's Inglewood office and Mr. and Mrs. Howard E. Douglass, owners of the home where the millionth meter was set. Serviceman K. J. P. Smith is making the installation.

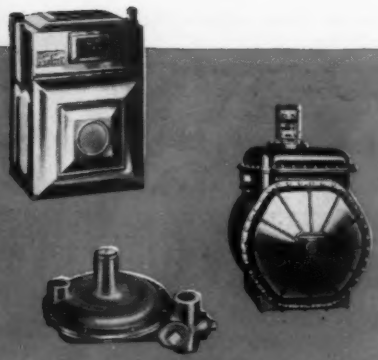
...for SOUTHERN CALIFORNIA GAS COMPANY

A milestone in the growth of Southern California was passed in mid-February when the Southern California Gas Company installed the millionth meter on its lines. It was an American Meter. And its installation meant, officials said, that the company is now serving a population of between 3,500,000 and 3,900,000 people.

Officials also pointed out that, in an area where people use gas more widely and more freely than in any other comparable area in the world, the Southern California Gas Company has managed to provide Gas service in all new homes by the time the customer was able to move in and start housekeeping.

To keep pace with an expanding demand, the company has invested heavily, as witnessed by the Texas-California pipeline recently completed to supplement basic Gas supplies from California fields.

American Meter Company congratulates Southern California Gas Company and its distribution engineers on their outstanding record. In the future, as in the past, we shall continue to aid the distribution engineers in meeting each new measurement problem through research and progressive manufacturing technique.



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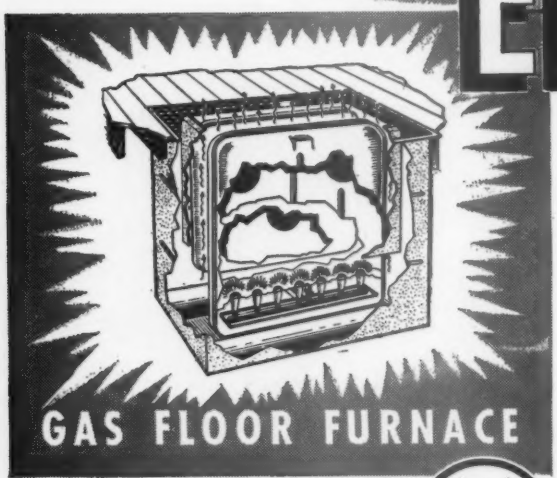

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Gas Has Got It— Going and Coming

By

Frank J. Nugent

Sales Promotion Manager
Bryant Heater Company

IT SEEMS TO ME appropriate to refer to the "going gas business" and the "coming gas business" because it is necessary to think of gas—particularly domestic gas—in these two ways.

The business of the gas utilities and of the manufacturers of gas burning appliances is keyed to the current supply of gas—that's the "going gas Business": and within that area of current supply, gas must compete with other fuels for sales and for customer preference.

The "coming gas business" is the greater distribution of gas and the greater sales of gas appliances which we can visualize for future years, and which we must prepare for *now* in organization and sales planning, and which we must promote *now* even in the face of current limitations of supply.

House Heating

The acceptance of gas heat for homes today brings a feeling of considerable pride, to those of us who have been promoting and selling the advantages of gas heating for many years.

It is gratifying to have the gas industry so generally recognized that gas heating is of vital importance to its growth. It is gratifying, too, to have the public acceptance of gas heat so clearly and emphatically demonstrated. In Detroit today, used houses equipped with gas heating bring $1,000.00 premium over similar houses with other fuels. In Ohio, new residential construction slowed down last year because gas was not available for new installations.

But, acceptance and public demand bring not only the responsibilities of rendering good service, but also new goals and greater ambitions.

We must recognize that we can take only a limited credit for the present acceptance of gas—many factors are involved—even though, of course, the major credit goes to the advantages which are offered by gas itself; but, even these advantages have their limitations; because they are, and must always be, subject to comparison with the appeals of other fuels. Therefore, we cannot afford to operate on the theory that the public now stands perpetually ready to take gas and gas appliances off our hands in unlimited volumes whenever we let them know that supplies are available. It will be safer to operate on the basis that gas and gas appliances must be sold.

Gentlemen, the only constant thing about markets is constant change.

New generations of children grow up and get married.

Our neighborhoods get new tenants, and the former tenants move into new neighborhoods.

Tastes change, in architecture, in home furnishings, in household equipment.

Industry changes its processes and its products.

New Markets and Opportunities

And underlying all, the general economics of living keeps on changing, sometimes at a slow rate, sometimes at an accelerated rate. In all this atmosphere of change, the gas industry and we who are part of it may profit if we are alert to the principle of changing markets, and keep promotional pressures going in the direction we want changes to take.

As the primary suppliers of gas fuel to the mass market of homes, the gas utilities face the primary challenge for future increases in volume sales and consumer preference. Are all the utilties anticipating their coming problems and organizing to meet them, or are some of them waiting for problems to develop to the point where they must be handled on a crisis basis?

If the gas companies are to get the gas they need and deliver it to customers who want it, when they want it—

If the gas companies are to meet successfully the competitive thrusts of other fuel interests—

The first and foremost need is for an organization manned by able and energetic people, geared up for attacks on new markets, rather than for the defense of existing markets.

Do the gas utilities have such an organization? I raise this question because more and more utility executives are saying that they are losing too many of their good men.

How do we get these men and hold them?

How do we convince capable, young men that the gas industry has a sound and growing future?

Certainly not by talking of restrictions and curtailments—

Not by looking backward, and

Not by a complacent attitude regarding our present position.

We must convince capable, young men that the gas industry *has* a wonderful future—

That there are plenty of opportunities for growth and advancement.

We must accomplish this not by talk, but by actions.

We must plan our expansion promptly and soundly.

We must tell our own organizations about these plans and about our future opportunities, and

We must *all* sell our future to the public.

We must offer good jobs.

We must pay our capable employees at rates comparable with other industries, and

We must reward generously for a job well done.

There is room for expansion even now in the gas utility business. Certainly, we can look forward to increases as great in the next 10 to 20 years as those we have seen in the past similar period. You can appraise these increased opportunities better than I can, but I think we can agree that we are going to need more gas, a bigger and better distribution system, and more good men to serve bigger and broader markets.

In addition to the man power problem—

The expansion of transmission
Storage and
Distribution facilities, and
Added and more effective advertising and selling efforts.
All take hard, cold cash.

Rate Increases

Obviously, the answer lies in increasing our selling prices—or gas rates. Competitive fuel rates have increased more rapidly than gas rates during the last few years. All other cost-of-living items have increased rapidly. Gas—the premium fuel—has lagged far behind in this parade.

There is a reason for this, of course. Gas utilities—being monopolies—must secure approval of rate increases through public utility commissions.

Being monopolies also carries the obligation of adequately serving all customers' needs. How better can rate increases be justified than by expenditures to adequately serve our customer demand?

Electric Competition

It should be evident that our success in the gas heating market—as well as in the industry generally—is going to depend on other things besides gas heating, such as what we are able to do competitively with cooking, refrigerator, and water heating appliances. I am sure you realize that competition for range, refrigerator, and water heater sales between gas and electric interests is becoming keener year by years. One electric manufacturing company has recently announced a 5 million dollar advertising program concentrated on electric cooking and water heating.

Last year, the gas range manufacturers sold 1,170,274 gas cooking ranges of the oven heat control type. This is 9% *less* than the industry sold in 1941. At the same time—that is, last year—there were 1,200,000 electric ranges sold—and that is 65% more than were sold in 1941, the industry's best pre-war year.

The electrical industry now claims:

14.5% market saturation for electric ranges.

6.9% market saturation for electric water heaters

and these figures are on an upward trend. While 1,800,000 gas water heaters were being sold last year, 1,100,000 electric water heaters were also being sold. So, it seems probable that if last year's trend continues, there will be as many electric water heaters sold as gas water heaters.

Someone is sure to point out that many of these electric ranges and water heaters were sold in rural areas. That's true, but it is also true that a very substantial percentage of gas ranges and water heaters were sold in rural areas for use with L-P gas. In fact, 47% of all gas water heater sales in December 1947 were for use on L-P gas. Your particular area may not show such a radio, but other areas show even higher ratios, because that 47% is a country-wide figure.

Appliance Refinements

The gas industry must have, and aggressively promote, an automatic range. Last year, the number of C.P. ranges was only 14% of the total of gas cooking ranges.

There is considerable discussion going on in the gas industry today about the type of service that should be provided on automatic ranges: that is, whether the automatic ignition on these ranges should be furnished by—

CONSTANT BURNING PILOT LIGHTS
OR
SINGLE POINT FLASH TUBE
OR
ELECTRICITY

I believe much could be accomplished if the gas utilities would take the position that they do not care what kind of ignition is furnished so long as it is automatic. This attitude would encourage the range manufacturers to produce whatever type they think best and promote their production to the limit. Such an attitude would make the automatic gas range more effective in meeting competition and in building and maintaining gas preference with the public.

Promotional Activities

If we expect to maintain our position of leadership and increase the public acceptance we have today, the whole gas industry must pitch in and promote gas and sell gas burning appliances all along the line.

We must do these specific things:

1. Be sure our organizations are strong in man power.
2. Get more gas, one way or another, as soon as possible.
3. Promote and sell gas heat, whether we have restrictions or not.
4. Get going on the automatic gas range.
5. Put sales pressure behind the gas water heater.
6. Continue to promote gas refrigerators and air conditioning.
7. Believe in gas—talk gas—sell gas—now and always.

Don't forget that automobile manufacturers and many others kept on advertising and building up demand all through the war years and afterward when their products were in short supply. They profited by that progressive policy and we can do the same and get a similar result.

Likewise, even though you are not taking on any new customers, you can still sell more gas heat by "upgrading" sales programs to your customers to replace their old, worn out heating plants with new, gas-designed equipment. You can use such a program as the vehicle for promoting even more strongly the advantages and benefits of gas heat.

And, finally, by all means, keep the public posted on the efforts and the progress you are making to get more gas.

Public Opinion

The principles of selling are not limited to the delivery of goods. The broader field of selling is the moulding of public opinion in the mass. For that we need, of course, the ability to supply what we recommend: but, before that—and more than that—we need trained and enthusiastic men who understand the values or selling for the long haul.

Remember—selling is a matter of people—not of goods!

I began by saying that there is a "going gas business" and a "coming gas business." I want to end on this note—that while we know we can handle the "going" business pretty well and get our share, there is no such certainty that we shall be ready for the opportunities in the "coming" gas business unless we organize and get ready for it *now*.

In a small community in Kentucky, they held annually an interdenominational picnic. One of the chaps who was going to attend, said to his colored boy, "I want you to plug 12 watermelons and slowly saturate them with good old Kentucky bourbon, however be sure they are placed at my table." When the day of the picnic was at hand, the old darky came over and said "Boss, I made a big mistake. I put the plugged watermelons at the head table, with all of the ministers." Well, what happened? The Methodists and Presbyterians tasted theirs and went "Pouff." The Baptists and Episcopalians ate theirs and asked where they could buy them. The Jews and Catholics put the seeds in their pocket.

My only purpose in telling this story is that I hope you will take home the seeds that "Gas *Has* Got It."

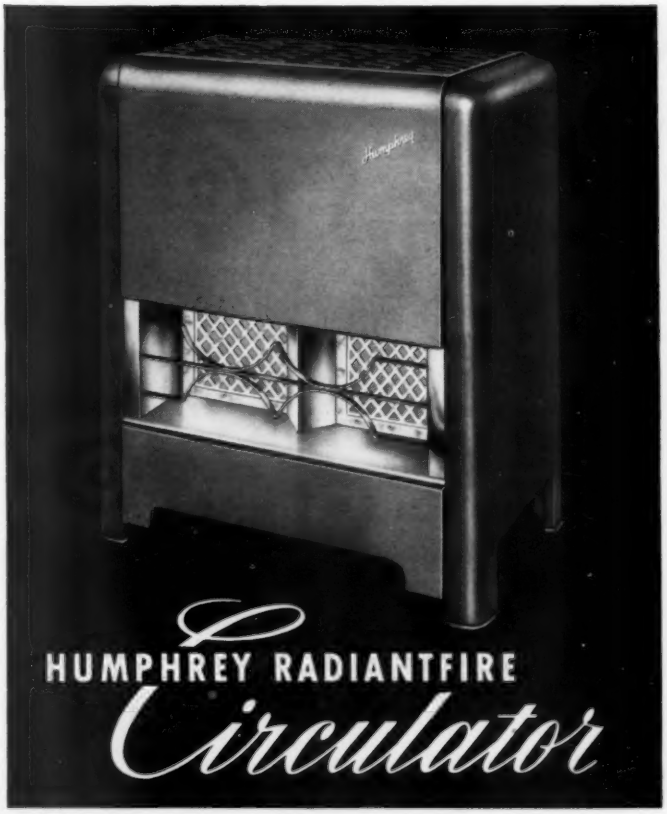
Paper presented at Meeting, Florida-Georgia Gas Meters Assn., Hollywood, Fla., Apr. 9, 1948.

New Home Service Booklet

"Home Service Serves the Community" is the title of a new booklet announced by the Home Service Committee of the American Gas Association. It is one of a series of training booklets in the Home Service Manual which is devoted to the aims, organization and operation of home service departments in the gas industry.

Mrs. Mary Belle Burnett, Home Service Director of The Cincinnati Gas and Electric Company, and Chairman of the 1947 Home Service Committee, was in charge of its preparation. Containing forty-eight pages and 37 illustrations, the booklet brings up to date the subject of training for home service "on the job."

YOU CAN'T BEAT IT...



FOR COMFORT...

FOR STYLE...

Hard to heat rooms become snug and cozy with a Humphrey Radiantfire Circulator. Sun-like radiant heat pours from the open front to thoroughly warm the lower levels, while warm air constantly circulates through the grille on top to heat every corner of the room. And the Humphrey Radiantfire Circulator is styled for modern living. Finished in opalescent baked enamel with just enough sparkling chrome for good taste, it harmonizes with any style furnishings and adds to the appearance of any room.

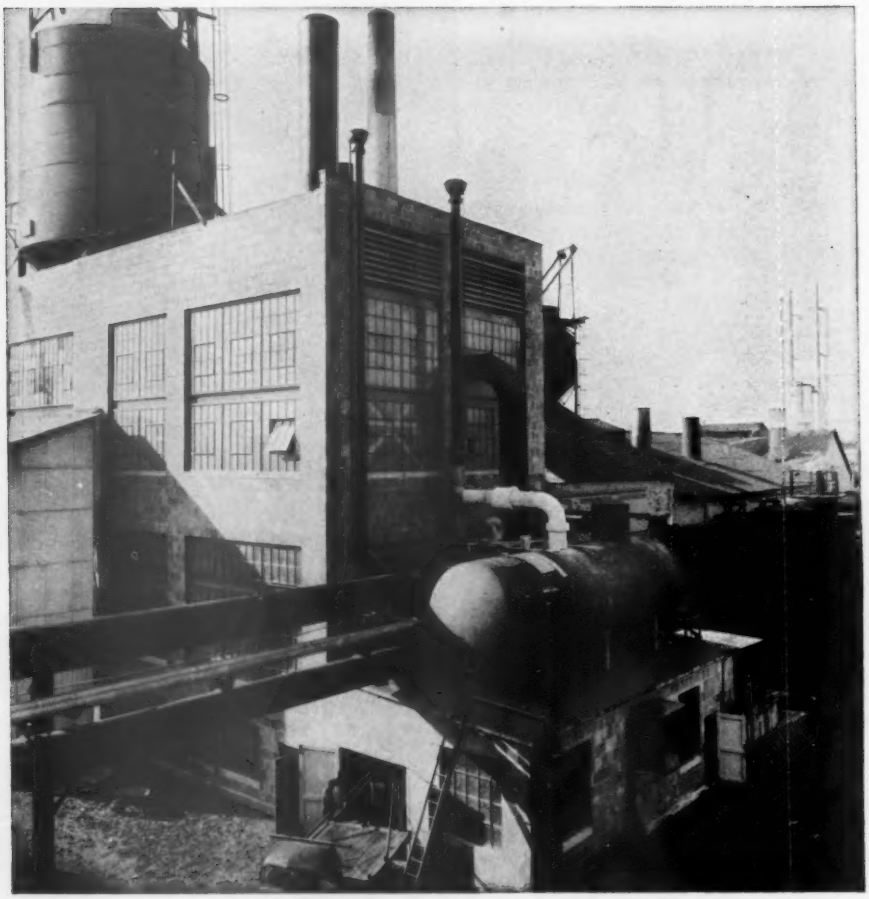
There's profit for you in Humphrey Radiantfire Circulator sales. *Write today for complete details.*

GENERAL GAS LIGHT COMPANY

KALAMAZOO, MICHIGAN

23 Warren Street, New York City • 2nd Unit Santa Fe Building, Dallas • 225 Eleventh Street, San Francisco

THE NEW GROWTH IN THE GAS INDUSTRY



ADDITIONAL PLANT CAPACITY including one 8,500 Mcf per day mechanical generator water gas set with auxiliary equipment and buildings.

AT HARTFORD, CONNECTICUT, PLANT OF THE HARTFORD GAS COMPANY

UNITED ENGINEERS & CONSTRUCTORS INC

NEW YORK 17 PHILADELPHIA 5 CHICAGO 2

Toronto, Canada Records A Century of Gas Service

FIRST recorded use of gas in Toronto was in 1841. Seven years later, The Consumer's Gas Company of Toronto was formed and from that date to 1948, one hundred years later, there has been an uninterrupted supply of this fuel of a thousand uses.

Unlike most discoveries, the use of gas as a fuel was realized with much excitement then left to remain in obscurity for over 2,000 years before it burst forth with a vigor that has progressed unabated since 1792.

About 450 B. C., the clever Chinese tapped natural gas sources with bamboo pipe lines and transported this inflammable "spirit" into their villages. They used its flame to dry their salt and happily did away with the chore of gathering kindling wood. They also stored this new "servant" in inflated skins and lighted their huts with a jet burning from a perforation in the hide.

From that time until 1609, little happened to advance the use of gas. In that year, a Flemish chemist, while puttering about trying to make gold out of base metals, accidentally discovered that coal, heated in a sealed crucible, yielded an inflammable gas. He called it Geest, the Flemish word for ghost, and from that term the word gas is believed to have come.

Birth of Gas Industry

Chemists delighted in toying with this ghost in their labs and lecture rooms but it took a Scotsman, William Murdoch, to put it to practical use. Murdoch was an associate of James Watt of steam-engine fame. In 1792, he lighted his house and grounds with gas, and it is this date the gas industry names as its birth day. Murdoch's practicality was supplemented by promotional effort when a German, Frederic Winsor, attempted to form a company in England in 1804 to sell the new illuminant. He raised some money and lighted the Pall Mall with gas in 1806 but his company failed. In 1812 he received a royal charter and formed the first gas company—The London and Westminster Gas Light & Coke Company. By 1815, they had three plants, had laid 15 miles of main, and were operating successfully.

Gas Lights in Toronto

Toronto wanted gas lights. A citizen's committee and appointed members of the council completed arrangements with the Montreal operator, Albert Furniss, to build a plant and supply Toronto streets with the necessary light for £7,500. He formed the Toronto Gas Light & Water Company in 1841. On December 19, the streets were first lighted with gas.

The event was a gala inauguration and the then 18,000 Torontonians used it also as an occasion to celebrate the birth of Queen Victoria's first son—later King Edward VII. The January 7, 1842, issue of the "Toronto Patriot" made a feature story of "The Illumination", as they termed it. Telling of the rejoicing in the streets, it stated in part: "At the appointed signal, the tolling of the bell in the cathedral tower, all hands rushed to the windows and in a few moments some hundred thousand lights flashed out on the bright frozen ground and the cold clear sky. Not a solitary house refused its quota, from the lofty transparencies of the City Hall down to the lowly shanty of the loyal labourer."

Toronto's enterprise was recorded for international benefit perhaps in Charles Dicken's "American Notes". He visited the eight-year old city in 1842 and wrote: "the town itself was full of life and motion, bustle, business and improvement. The streets were well paved and lighted with gas."

Consumers Form Own Company

It can't be said that the Queen-city people lost their enthusiasm for Queen Victoria's first son but later events reveal they soon forgot their jubilation over the gas illumination that marked his birth as well as the first use of the modern light. Complaints were growing in intensity that the gas was of poor quality, irregular supply, and above all, too costly. The rumblings of discontent resulted finally in a public meeting in the North American Hotel on September 17, 1847. There it was decided to start a new gas company, financed by the citizens at large and operated for their benefit. Many subsequent meetings were held that fall and, as the minutes record, were

Edward J. Tucker
V.P. and Gen. Mgr.
The Consumers Gas Company

"respectably and numerously attended." Stock was being sold at £12-10 ($60 approx.) with a limit of ten shares to a person for the new Consumers' Gas Company which was pledged to make "a constant supply of wholesome gas at a reasonable rate".

The public-spirited citizens worked with a speed almost incredible for the facilities and communications of the day. In two months they had appointed directors; sold £10,000 stock; applied for charter; petitioned city for right to dig in the streets; and had brought experts to the city to plan the new works. The minutes only record one directors' meeting postponed for lack of attendance. The town fire-alarm bell had rung and most directors, being members of the voluntary brigade, had to leave.

The first board of directors was: Charles Berczy, postmaster, President; Richard Kneeshaw, druggist, Vice-President; E. F. Whittemore, merchant, Treasurer; Hugh Scobie, publisher and editor of the British Colonist; Hugh Miller, druggist; George C. Horwood, hotelkeeper James Beatty, leather merchant; John T. Smith, hotelkeeper; Peter Paterson, dry-goods merchant; Richard Yates, grocer and tea merchant; R. H. Brett and David Paterson, both hardware merchants. John Watson was appointed Secretary.

The big day for these earnest citizens came on March 23rd, 1848, when royal assent was given to the bill granting a charter to The Consumers' Gas Company of Toronto. With great pride and on advice of their engineer Falconer, a Montreal man, they anniunced that the company would be in operation "ere the next close of navigation".

This was the birthday of a small company in a small city. The gas company, a lusty infant, took the hand of its fourteen-year old brother, the city of Toronto, and they romped along together until a century later each was numbered among the largest and most influential in its particular field in North America.

Buy Old Gas Works

Early plans to build a new works were changed and the old gas works were purchased and improved. Production increased by one-sixth (about 4,000 cubic feet a day) but they could not reduce the price of gas from 25 shillings ($5.00) per thousand cubic feet. With the directors often adding personal funds, work continued and the first dividend was paid early in 1849. Report of the first annual meeting in October of that year mentions extreme difficulties but a hope that things will be better soon. Gas production had been 5,834.000 cubic feet, compared to 1,146,000 in 1842. The use of gas meters was being encouraged by this time and in the cases of taverns—the city's boisterous, night-life centres—meters were obligatory. Most customers still paid for their gas according to number of outlets and were watched carefully by the street-walking inspectors to see that they were all shut off at a certain hour of the night.

In 1850 there was a profit of £670. Eight miles of mains had been laid.

Build New Works

From this date to 1857, progress was phenomenal with production reaching 65 million cubic feet, ten times the 1850 figure. In 1851, a most acceptable 40 percent reduction in the price of gas to 15 shillings per thousand cubic feet, had been made. The company had outgrown its temporary office in the St. Lawrence Market Building, a second on Wellington Street, and had moved into new quarters, 19 Toronto Street, still the head office. The price had been reduced again in 1853, making it the lowest on the continent except in Philadelphia and Boston. By 1854, production for the year having soared to 14 million cubic feet, a new plant was erected on the site of the old parliament buildings. It was in production by 1855 and was capable of supplying 100,000 people, more than twice the population of 42,500 then. The great demand for gas was attributed to the high cost of candles.

The depression of 1857-1866 hit the gas company as it did all business in Toronto. Annual production dropped to 27 million from its 65 million peak. But under the direction of President E. F. Whittemore, who had succeeded Charles Berczy in 1856, and Manager Henry Thomson, the company held its own financially.

By 1873, the 25th anniversary, with Manager H. Thomson still in charge, the company had received permission to increase its capital from $400,000 to $1,000,000 for a large expansion program. There were now 2,050 customers and annual production was up to 72 million cubic feet, twelve times the amount of the charter year.

Electricity a Threat

In 1878, with the oil scare of 16 years ago still fresh in the minds of the directors, they began to worry about the lusty youngster—electricity. With evident foresight they sought, and were granted, an amendment to their charter in 1879, permitting the manufacture and sale of electricity and also the sale of gas for heating and cooking. That same year, the price of gas was reduced to $1.75 and a revolutionary system of gas making was adopted. It was the new water-gas process.

While confidence was expressed that gas would always hold its own with electricity, apparently no chances were being taken. The company worked feverishly to improve its lamp burners and to extend the use of gas for power and cooking purposes, for which a special $1.25 gas price was set. Electricity made a significant advance when the city street-lighting contract provided for displacement of some gas lamps with 100 electric ones. In 1885, the year some of the company's workmen were being called to active service for the Riel Rebellion, it was reported with much enthusiasm that 9 million cubic feet had been used for cooking and gas engines, more than five times the amount of five years before. The price was made $1.25 for all customers and $1.00 for cooking and engines. In that same year, Von Welsbach invented his gas-burner mantle which increased the brilliancy of a gas flame and was responsible for keeping gas in the illuminating business many more years than was expected at the advent of electricity.

Electric Franchise Denied

In 1889, it became obvious that electricity in the United States was making great strides so the Consumers' Gas Company applied for a franchise to go into the electric-lighting business as permitted under its amended charter. Though negotiations were carried on at great length, and despite an offer by the company to put all wires underground, the franchise was refused. The following year, the Toronto Incandescent Electric Light Company was formed and the city reduced the number of gas lamps by 2,300.

Added to this blow was a general business depression which lasted about six years. Even in this period some progress was made and plant capacity was enlarged. In 1897, a good increase was shown—production at 660 million was 30 percent above 1891, the year the electric company started—and service was extended to East Toronto Village and Eglinton. James Austin, who had served as president for 23 terms, died in 1897 and was succeeded by Larratt W. Smith.

By 1905, the year George Cockburn succeeded Larratt Smith as president, the use of gas for purposes other than lighting was fully half the total output and the fear that electricity would be the company's undoing disappeared altogether. They even pictured gas being used to heat homes before very long. In fact, many now looked upon this young-

Plant of the Consumers' Gas Company in 1855

ster, suddenly grown man, as a welcome partner in public service. "Electricity and gas have complementary functions," they said.

This confidence became a realization in the early years of the new century. Gas was reduced to 75c. Shares of the company were selling at twice their par value. A new plant was constructed, which started production in 1909. W. H. Pearson, after 55 years with the company, the last 34 as secretary and manager, retired and was succeeded by Arthur Hewitt. President Cockburn served only one year and was followed by John L. Blaikie in 1906. A. W. Austin succeeded John Blaikie in 1912.

In the early part of the 20th century, gas began to assume a new load—water heating. It began modestly but the demand for this great home comfort has increased year by year. And gradually, the old hand-operated model has given place to the modern automatic water heater.

Seventy-fifth Anniversary

The company celebrated its 75th anniversary in 1923 and was able to show that despite increases in the price of gas caused by war-wrought difficulties, sales had expanded greatly.

In 1924 a start was made on a new medium-high pressure distribution system. When completed it was recognized as a model system. It contributed largely to the rapid advance of sales in following years. Besides other new sales techniques, the Home Service department started broadcasting lectures by radio.

In 1934, Arthur Hewitt, the general manager, was elected president following Mr. Austin's death. A. W. Austin came within one term of matching his father's record of 23 years as president.

Upon Arthur Hewitt's death in 1936, T. Bradshaw was elected president and Edward J. Tucker was appointed general manager. Mr. Tucker still holds this position in addition to being vice-president. The record of the company is unique in having had only four general managers in its 100 years.

The present Station A plant of the Consumers' Gas Company

After a Century Toronto Views the Future

What of the future? This much we know. Our city is expanding, in fact, bursting at the seams. Consumers' Gas is still striding along the path of progress hand in hand with its brother—older by 14 years—the city of Toronto. And the young brother helps too—he pays taxes to the older one of about $1,000 every day. There are a thousand uses for gas and there are 1300 loyal and enthusiastic employees who are anxious to tackle the company's second century. How can the record be anything but progress and uninterrupted service for another hundred years at least?

Servel Offers New Sales Promotion Material

The Advertising and Sales Promotion Department at Servel has announced two new items through R. J. Canniff, advertising and sales promotion manager. The first is a new 24-sheet poster, designed for Servel by Howard Scott, based on the Servel theme "Nothing To Wear." It depicts a small boy in swimming with a dog running away wtih his overalls.

Howard Scott, an outstanding American poster artist has won wide recognition for his human interest paintings. On this new Servel poster, Mr. Scott uses his smile-provoking technique to emphasize the story of Servel's "Nothing To Wear" theme.

The manufacturer of the gas refrigerator also released a new lucite holder for "Homemaker's Digest." This attractive new holder which bears the legend, take a copy, measures approximately 8½ inches wide, 6 inches high, and 6 inches deep. Made of a small sheet of clear lucite the holder will take 40 copies of the "Homemaker's Digest." Servel is not stocking this item and it will be available directly from the vendor.

CRUSE-KEMPER COMPANY
AMBLER, PENNA.
GAS HOLDERS
Low Pressure High Pressure Inspection
Purifiers Tanks Flues
Over 40 Years of Sound
Steel Plate Construction

the Corporation President

WHO ALMOST SLEPT TOO LONG

T. M. Stanton* was having a nightmare. For months he'd been preoccupied with the production problems of Empire Gadgets, Inc. So preoccupied, he'd even half-admitted to himself that he was devoting far less thought to national problems than a leading citizen should. But the urgency of his immediate interests kept shoving these concerns into his subconscious mind. Now they were torturing his sleep.

"T. M., old boy," one spectre was saying, "how would you like a nice black depression to come along and swallow up your whole company?" And a green-eyed ogre leered, "While you're neglecting your free-enterprise system, we're moving in with *another* system!"

Stanton's body lurched. "No!" he thundered. Awakened, he scratched his head, murmuring, "Gad, what a dream! H-m-m—wonder what sort of contribution I ought to be making . . ."

Here's Something, Mr. President, You Ought to Do Right Away!

Check up on the status of the Payroll Savings Plan in your company. By making U. S. Savings Bonds easily available to your employees "on the installment plan," it benefits not only the employees but your business and the nation as well! Here's how:

(1) The Payroll Savings Plan builds financial security for each participant. The Bonds pay $4 at maturity for every $3 invested.

**This one is fictitious—but it might be any corporation president.*

(2) The experience of 19,000 companies operating the Payroll Savings Plan shows that it makes employees more contented in their jobs—cuts down absenteeism—even reduces accidents!

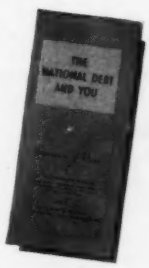
(3) The Plan helps to spread the national debt and thus helps secure your business future. How this works is clearly and briefly described in the free brochure shown below.

Why Executive Backing Is Vital

Employees still want the benefits of the Payroll Savings Plan. In fact, they *need* the P. S. P., because banks don't sell Bonds on a partial-payment plan—which is the way most workers prefer to buy them. But war-time emotional appeals are gone. Human nature being what it is, the success of the Plan in your company is liable to dwindle unless a responsible executive *keeps promoting it.*

So—today—*check up* on the status of the Payroll Savings Plan in your company. *Act* on your responsibility to see that it is vigorously maintained.

The State Director will gladly help.



Be sure to read this! *"The National Debt and You," a 12-page brochure, brings you the views of W. Randolph Burgess, Vice Chairman of the Board of The National City Bank of New York —and of Clarence Francis, Chairman of the Board, General Foods Corporation. Request your copy from the Treasury Department's State Director, Savings Bonds Division.*

The Treasury Department acknowledges with appreciation the publication of this message by

AMERICAN GAS JOURNAL

This is an official U. S. Treasury advertisement prepared under the auspices of the Treasury Department and The Advertising Council.

Sales Strategies for Today and Tomorrow

By
Briant Sando

Sales Counsellor
Louisville, Ky.

THE once-popular song, "Lay that pistol down," carries advice that's not good for gas appliance dealers. Too many people already have laid the pistol down during the last few years.

Too many retailers, sales and service people have been thinking, "Oh, what's the use? Let's ride the gravy train as long as we can. Other lines have been getting by with murder—poor quality, poor service, poor everything. Why not get our share now?"

Instead of this negative attitude, instead of laying down our sales tools, now is the time to be active and not passive, energetic and not careless. Smart dealers and salesmen say, "Let's do things a little better today, so we won't have to worry so much about tomorrow."

Courtesy and consideration were war casualties almost everywhere. Some prospects and customers got pretty shabby treatment. Now they'll be doubly responsive to top-notch attention and your best efforts to meet their requirements.

Are *you* doing all *you* can to make customers feel that they are important, that their business is appreciated, that you really want to keep them happy and satisfied, and that you want them to come back again and again?

These are points worthy of a careful check up. The way you handle them may decide your future.

Rise Above the Average

Most successful gas appliance businesses are built on the basis of quality or service or helpfulness above the average.

It's not difficult these days to be above the average—because the average is so low. Here are a few examples:

Last winter, when coal was scarce, a friend of mine caled up four retail coal companies and they all said no. On the fifth call the fellow on the other end of the line didn't even wait to hear what my friend wanted. He just shouted into the 'phone, "We ain't got any," and hung up. None of these five companies was sufficiently interested even to ask my friend's name and address, or to say they would try to get him some coal some time in the future. They just crossed themselves off forever for future business!

When I moved from New York to Louisville one of the first things we needed was a laundry. I thought I'd try a neighborhood one . . . so we put the dirty clothes in the back end of the family car and hauled them over. I said, "I'll come back and pick them up in a few days." When I went back the girl at the counter said, "They're not ready yet." She set another date. We went back again. Still not ready. On the third trip the clothes were ready and I gave the girl a ten-dollar bill. She said, "I don't have change for that." And I said, "Well, lady, I can't keep driving back and forth forever." She snapped, "Well, why did you ever come here in the first place?"

Some folks in the gas appliance industry have been failing in similar ways to capitalize on today's opportunities.

Of course, we al have our troubles and worries. That's why sound principles of salesmanship are so important in helping us get along better with customers and prospects. Everything you say, everything you do, creates impressions upon other people—and whether these are good or bad depends on you.

The surest guarantee for your future in the gas business is to improve your own efforts . . . and those of your assistants . . . by working harder or by selling more intelligently.

Now for a six-shooter sales formula: six points so simple and usable you can apply them every day in your own work and in teaching them to all your staff of sales and service employees who contact the public.

Point 1: Be sure your gun is loaded. Your actions and your words are the ammunition you are constantly shooting off. Every idea or service, every sales argument, every gas appliance item you stock has various good points. Find them. Load up with them.

Before you try to convince the other fellow, get the whole pattern clear in your own mind. In spare time jot down your leading points, then pick out the most timely or the most important ones and use them first. Keep this up for a while and gradually you will find yourself making a logical, convincing sales talk.

One of the biggest things you have to sell is your business and yourself. Westinghouse, selling Westinghouse, is selling the biggest thing it has to offer. DuPont, selling DuPont, is selling something more important than cellophane, anti-freeze, plastics and other stuff. Ditto for General Motors, General Foods, General Electric and others. Ditto for you, too.

You and your personality can make or break the merchandise or gas service you are selling. If people don't like you and your salesmen or assistants (including your service men and telephone girls) they can't really like your establishment or your line of goods to the point where they'll give you most of their appliance business.

When you can't make a sale make a friend . . . some day he may buy or help you with others.

Point 2: Load up for bear; don't use a pop-gun. Knowledge is power, and you can't know too much about any gas appliance line you expect to sell to others. Know the bad as well as the good points . . . and then you will be prepared for anything that may arise.

Besides words, load up some actions—drama, showmanship. Then you will be more interesting and your words will make a deeper impression.

Two points are always running through a prospect's mind as you relate your sales story:

1. What will it cost me?
2. What good will it do me?

Some years ago we did some sales work for a company marketing a new domestic appliance—in a highly competitive sales field. These salesmen didn't just ask dealers, "Wanna buy our new gadget?" Not on your life! They knew the dealers' thoughts were not on *buying* but on *selling* such items.

So they phrased their question, "Do you want to add variety to your line? Do you want to offer your customers something new? Do you want to tie up with our advertising campaign?" To these and similar questions every retailer naturally replied, "Yes."

Then the salesmen could go ahead and tell about their quality merchandise, their years of careful preparation, their attractive dealer helps, their improved design and performance—everything to make the deal seem logical and easy.

In the same manner, when you want to pass merchandise along to the consumer, you need to talk in terms of the consumer's interests—more enjoyment, improved results, greater safety, surer satisfaction, etc.

Point 3: Carry ample ammunition. When you go out hunting, you want more bullets or shells than just what your gun will hold. And you wouldn't go out driving in an automobile without a spare tire, would you? So, in the gas heating or appliance business, you also do better when well equipped . . . when you have enough extra ammunition to cope with all possible contingencies.

Work out a number of good "reasons why"—don't depend on one thing or one "reason why" to convince the other fellow.

A one-track approach won't do for the tough postwar era now here. As competition grows keener, it will increase. Every dollar in circulation will be competed for by every product on the market. The appliances you carry will be just one of many things the customer will consider. Then he can take his choice. It won't be just a case of whether it is you or your competitor who sells the prospect. It will be a case of whether or not the prospect buys what either one of you is selling . . . or something entirely different.

The great army invasions of 1944-5 will be exceeded by the Great Sales Invasions of 1948-9, when selling again becomes competitive in all lines.

The days of no planning, no training for American business are over. Just as the modern army can win only when thoroughly trained and completely equipped, so will your "luck" in the gas heating and appliance industry be governed accordingly.

Point 4: Take careful aim—shoot straight. After you have your words and actions right, then point them right. Remember "you" is a stronger word than "I."

That's why people always tell you, "Don't start off a letter with the personal pronouns I or we." Well, that's not terribly important; some of the world's greatest letters have started off in the first person, But the theory is right. The thought back of a good start always is You—*you*, the other fellow.

A bad start for a letter—or for a sale—is, "We have a gas heater or appliance that we'd like to sell you." Better say, "You can enjoy life more, make a hit with your wife (or husband), improve your home, make money, or save money, or benefit yourself in certain definite ways, by doing business here!"

Instead of saying, "I want you to buy this gas heating equipment (or gas appliance item) from me," say, "You want the latest and best for your money, don't you?" Then show how you propose to provide exactly that.

Think, talk and sell on a "you" basis instead of an "I" basis; look at everything from the other person's

"Elno"

TRADE MARK REG.

RUST PREVENTER

For Automatic Water Heaters, Range Boilers, And All Types Of Hot Water Storage Tanks

"Elno" prevents rusty water in domestic and industrial water heating systems. It is a pure and simple rust preventer. It extends the life of galvanized storage tanks, especially where corrosive water conditions exist.

"Elno" is made to fit all makes of Automatic Water Heaters, Range Boilers, and Large Volume Hot Water Storage Tanks.

"Elno" is easy to install. Remove the hot water fitting and replace it with the "Elno" rod—that's all. "Elno" is equipped with a hot water fitting.

"Elno" enables you to sell Clean, Rust-free Hot Water Service. "Elno" gives you another talking point, an added selling feature.

There is an "Elno" made to fit the water heater you sell.

Write for prices.

If you want to read the Story of Corrosion, its Causes and Prevention, write for Facts Bulletin No. 102.

The Cleveland Heater Co.

"Elno" Division

2310 Superior Avenue **Cleveland 14, Ohio**

viewpoint; you'll find your popularity and your sales zooming.

In New York I heard Dale Carnegie say, "A man is more interested in a boil on the back of his neck than he is in 20,000 people starving to death in China."

The other night I was over at a neighbor's house, watching them show their home movies on the screen. I saw pictures of the man and his wife, their two kids, their dog, their front yard, their back yard. It was all very well, but I was bored stiff. I wondered why.

They were nice people; nice home; nice family; nice pictures. I got the answer from their 8-year-old daughter. When the show was over I said, "Mary, what part of the movies did you like best?" And little Mary rang the bell. She said, "The part I was in." Why, of course! Don't we all!

To truly interest people, put them in the picture; make them and their desires part of your sales talk.

Also use people's names; remember their names and faces. They like it!

"Shoot straight" means to be honest; no gas appliance salesman can be permanently popular or successful by following a crooked or devious path.

It also means—be brief, shoot straight at the bulls-eye. Words are like sunbeams; the more they are condensed the deeper they burn. How many time have you listened to retailers and sales people who wandered all around in their talk? They didn't seem to know where they wanted to go, nor why, and naturally you can't follow that kind of bumbling leadership.

The Bible tells the Story of Creation in about 400 words; the Ten Commandments in even fewer. Lincoln's immortal Gettysburg address contains only 300 words; the Declaration of Independence about the same. No wonder folks laughed at the old OPA when it issued an order to change the price of cabbage seed and used 2,175 words!

Point 5: Pull the trigger—action wins. No matter how good your equipment, appliances and service may be, they won't sell themselves. No matter how good your ideas, they won't sell themselves. No matter how good *you* are, it takes action to get results.

Without action, all the good sales points herein outlined won't work. Here is one factor that is strictly up to you: *Get in there and pitch!*

When a good advertising man writes an ad, his first concern is for a good headline or a compelling layout. One that will attract attenion; one that will hit the bulls-eye! Every ad man knows he must say or do something to catch the other fellow's interest quickly. Often the first 10 seconds, or the first 10 words, are more important than the next ten hundred. When you don't start off right, it's hard to finish right.

In the Kentucky Derby one horse sticks his neck out in front and comes home the winner. In a track meet one sprinter breaks the tape and wins; the others are losers. In a sales talk, if you don't start out on a sound and convincing basis, you won't complete as many sales as you should.

Avoid superlatives, avoid negative and "iffy" thoughts. Such things drag the sale, rather than help to advance it.

Point 6: Watch the kick. The harder you shoot, the stronger the recoil or kick. Watch that. Here's where it pays to be warm, friendly, human. Have "the voice with a smile." Some people can say no to me and leave me feeling better than others do when they say yes.

Remember, your voice is the carrier of your message. If you put it out as an old sour-puss, it will usually come back to you in the same way. Be pleasant and people will be pleasant with you.

One of my old advertising agency friends handled some big accounts and was a smart merchandiser. On the walls of his office was a framed quotation, the basis of his business success. Was it something from Plato? Or Aristotle? No, it was not even from Ben Franklin's Almanac. It was from the world's champion hog caller out in Missouri.

"You've got to have *appeal* as well as *power* in your voice. You've got to make the hogs think you have something for them."

Sometimes *how* you say it is more important than *what* you say.

To get repeat business, to bring the same customers back again and again, is most important; and this requires fair and friendly treatment.

That was true yesterday, it is true today, it will be true tomorrow. Of course the next few years will bring many changes in gas appliance industry, but the same basic principles will still apply. Your merchandise may change, your service may change, your ideas may change; but you'll still be dealing with human beings, for life and business depend on people . . . and people and human nature do not change much from one generation to another. By doing a better job today you will be laying the foundation for a better tomorrow.

Consolidated of Baltimore Reelects Officers

Wm. Schmidt, Jr., was reelected Chairman of the Board and President of the Consolidated Gas Electric Light and Power Company of Baltimore at a meeting of directors following the annual stockholders' meeting.

The company also announced reelection of Charles P. Crane, Executive Vice-President; Henry R. Cook, Jr., Herman L. Gruehn, Ralph L. Thomas, and J. Theodore Wolfe, Vice-presidents; Austim E. Penn, Secretary; and Francis E. Rugemer, Treasurer.

Here's the *ideal* gas load . . . ON THE LEVEL!

Continuous, on-the-level, gas load, without peaks, valleys or other capacity worries, is not only the most care-free type of gas load—but the most profitable one as well.

The Republic DUO-WAY Disposal Unit, the next major appliance in the American home, *gives* this Straight-line load every hour of the day . . . every day of the year.

TWO-ZONE DESIGN . . . one for drying, one for burning.

CONTROLLED DISPOSAL . . . no piling up of unburned material.

SELF-CLEANING . . . no shaking required

are some of the superior features of the Republic DUO-WAY that give GAS the added prestige of a really *successful* disposal unit.

additional information available upon request

AUTOGAS CO. 2157 W. Fullerton Ave. Chicago 47, Illinois

New Development in Gas Range Venting with Mechanical Draft Hood

By
Fred A. Herr

DESIGN of a mechanical-draft gas range hood which is believed capable of eliminating to a satisfactory extent the disagreeable conditions arising from the emanation of grease, smoke and food odors into the kitchen has been developed to the completed-model stage as a result of a research project which has been underway for the past year or more at the Gas Appliance Laboratory, operated jointly by the Southern California Gas Company and Southern Counties Gas Company.

The project for developing an effective range ventilating hood was conducted under the general supervision of Harry L. Warren supervisor of the Gas Appliance Laboratory. In undertaking the initial research on the hood project, the research staff of the two West Coast utilities has been conducting its experiments on the theory that probably the most promising method of meeting the kitchen ventilation problem would be to provide such ventilation at and from the gas range; that all the elements necessary for ventilation should be incorporated in the range itself, rather than by the use of conventional wall or ceiling fans.

Working Model Developed

The directing heads of the Gas Appliance Laboratory chose to do this by providing a ventilating hood as an integral part of the gas range and also by building the blower and motor into the range so that the only installation required for complete kitchen ventilation, other than the range itself, would be sufficient duct to lead the blower exhaust to the outside air. This, it was felt, could in most cases be accomplished by running the duct down through and along the floor to an outlet in the foundation wall. The appearance of such under-the-floor duct work is shown in the photograph (Fig. 1), which illustrates the cut-out floor below the model unit displayed at Los Angeles in February.

Model Previewed at Los Angeles

Several assemblies were constructed at the Gas Appliance Laboratory in order to obtain design and operating data. Ultimately a finished working model was produced in which a current Eastern-made range was selected because its construction lent itself more easily to hood installation. Western manufacturers assisted with the construction of a porcelain enameled metal hood.

The working model range, with the proposed hood attached and the blower and motor installed in a lower drawer, was exhibited for the first time in Los Angeles on February 25, at the time the Range and Refrigerator Council of the Pacific Coast Gas Association met in the Southern California Gas Company's auditorium for one of its periodic conferences. The presentation there was made largely to obtain comments and create interest, and also with the hope that the model would stimulate manufacturers to follow the development further.

Some 70 to 75 representatives of range manufacturers and West Coast gas companies inspected the model hood installation at the Los Angeles preview. Opinion among range manufacturers and utility executives alike was that the laboratory staff had produced a practical ventilating hood which should contribute a great deal to eventual solution of the range ventilation problem.

A patent is reported to have been applied for on the design developed by the Gas Appliance Laboratory.

Figure 1: View of the cut out floor reveals the method of installing the duct work for the ventilating hood.

The patent is to be assigned to Southern California Gas Company and when it is obtained, the company announced, it will grant royalty-free license for production to approved manufacturers.

Warren Reports on Hood Project

In a recently issued report on the status of the ventilating hood research project, Research Director Warren described the steps that had been taken to bring the project to its present stage of development, and also outlined the structural and operation features of the model unit.

He declared that the project assumed as its objective the designing of a mechanical-draft range hood capable of eliminating in a large measure the disagreeable conditions caused by the emission of grease, and smoke from hot fat, food odors, moisture and heat, which are produced in cooking operations regardless of the type of appliance or fuel used.

He cited the conditions produced by the emission of cooking by-products into the kitcen as: rise in air temperature; rise in relative humidity; accumulation of grease and dust on wall surfaces; and diffusion of cooking odors through other rooms of the house.

Objectives to be Obtained Cited

In his report Mr. Warren listed the specific objectives the investigation had set, which was to design a hood that would meet the following specifications:

1) The hood and fan should be a standard factory built unit, designed to be attached to a range manufacturer's standard range model, so as to eliminate the expense and mechanical difficulties entailed in building or fabricating a mechanical ventilating hood system on the customer's premises.

2) The installation of the hood and range combination should not require the running of exposed duct work or the furring-in of duct work in order to hide it from sight.

3) The installation of the hood and range combination should not require the running of ducts through ceilings and roofs in order to discharge the cooking vapors and ventilating air out of doors.

4) The installation of the hood and range combination, in both old and new houses should be easy of accomplishment and low in cost.

5) The combustion performance of the range should not be affected adversely when a hood is installed on a standard range model.

6) The combustion performance of the range should be satisfactory either with the fan in or out of operation, so that use of the range is not dependent on the continuity of electric service.

7) The installation of a hood on a standard range should not affect the baking performance of the oven adversely when the fan is either in or out of operation.

8) The forward projection of the hood and its height above the cooking top should be such that the housewife may look into the pans placed on the grates and may stir the contents of such pans either by hand or by means of an electric mixer.

Harry L. Warren,
Director of the Gas Appliance Laboratory

9) The hood fan should be controlled by a manually manipulated electric switch located conveniently on the range, so that operation of the ventilating feature of the hood will be optional with the user.

10) Ranges with hoods should be capable of being used to supply heat to the kitchen when the user so desires.

11) The hood should be designed so that when the fan is not in operation combustion products from the oven, broiler and top section will be expelled far enough from the wall so that these surfaces will not be soiled or streaked as a result of induced convection currents of room air.

12) The air throughput of the fan should be small so that there will no interference with the normal operation of winter and summer air conditioning systems.

13) Consumption of electric current by the fan motor should be small, so as to limit operating costs to a very nominal amount.

14) A facility for warming dishes and keeping cooked food warm should be incorporated as a part of the hood design.

15) The design of the hood should be such, that it will be easily adaptable as an added feature to a range manufacturer's regular line of standard models, so that he and his dealers need stock only standard range models and some hood kits.

Technical Features Described

The Gas Appliance Laboratory, according to the Warren report, thereupon proceeded to design a mechanical-draft hood which meets the specifications enumerated above. He cited the general overall dimensions of the model design as follows:

Hood . . . 40″ long, 15¾″ deep, 7″ high at rear, with 3″ apron in front.

Splasher panel . . . 13″ high.

Overall height of hood above cooking top . . . 20″

Clearance between cooking top and lower edge of front apron . . . 17″

"The oven and broiler vents," Mr. Warren reported, "connect with the hood. The suction duct connects the suction manifold with the inlet of a small multi-vane fan installed at the rear of the utility compartment of the range. The discharge of this fan is pointed downward so that it can be easily connected to a discharge duct located under the floor and extending from the range location to the nearest ventilation opening in the foundation wall of the house in which the range and hood combination is installed."

He pointed out that the hood, suction duct, fan and motor unit and necessary electric wiring and switch, would comprise the kit to be supplied by the range manufacturer for installation on one of his standard range models.

The Hood's Operating Features

The operating features of the hood are as follows:

"The combustion products, odors, vapors and grease splash droplets resulting from cooking operations in the oven and/or broiler are emitted through oven and/or broiler vent openings (see No. 1 in Figure 2) into vent boxes (9) and rise by gravity, through vents (2) and ell connections into vent manifold (14) where they spread out to be distributed more or less evenly through a discharge slot—¾ inches wide by 38″ long—formed by panels (4) and (5).

"The combustion products and cooking vapors from the four-in-line top burners rise vertically from the cooking top, strike panel (5) and travel upward and forward below panel (5) until they contact apron (13).

"When the fan is in operation, suction at the horizontal suction slot (15) and the two vertical suction slots (17) capture the combustion products and cooking vapors intercepted by apron (13). These products and vapors flow through suction chamber (12) into suction mani-

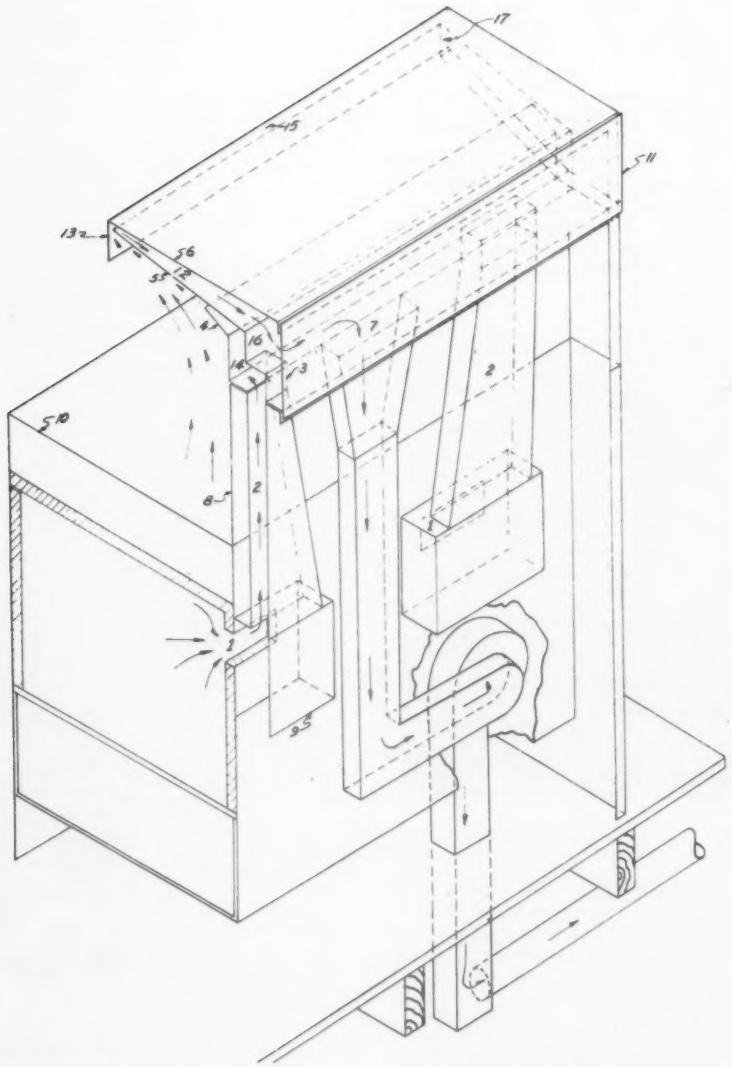


Figure 2: An engineering drawing with index of the range and hood parts.

INDEX OF RANGE AND HOOD PARTS

1. Oven and Broiler Vent Openings (Range)
2. Oven and Broiler Vents (Range)
3. Ell Connection
4. Panel
5. Panel
6. Canopy
7. Suction Opening
8. Splasher Panel (Range)
9. Vent Box (Range)
10. Cooking Top (Range)
11. Vertical Rear Side of Suction Manifold
12. Suction Chamber
13. Apron
14. Vent Manifold
15. Horizontal Suction Slot
16. Suction Manifold
17. Vertical Suction Slots
18. Suction Duct

A) Effect of hood on baking performance of the range oven.

B) Effect of hood on the combustion performance of the range oven.

C) Efficiency of the hood in removing sensible heat created by the oven burner flame.

D) Efficiency of the hood in removing water vapor diffused in the oven combustion products.

E) Efficiency of the hood in removing sensible heat available as a result of top section cookery.

F) Efficiency of the hood in removing water vapor created by the top section cookery. (The report contained the added comment that this is probably indicative also of the efficiency of the hood in removing cooking vapors and odors.)

fold (16) and through suction duct (18) into the suction opening of the fan. From the fan they are discharged into a duct located under the floor which extends from the range location to a nearby ventilating opening in the foundation wall. This flow of combustion products and cooking vapors is shown by arrows in Figure 4.

"When the fan is not in operation, there is no suction at slots (15) and (17), hence the combustion products spill into the kitchen area from under apron (13). However, as these products are discharged approximately 15¾ inches from the wall, no streaking of this surface should result.

"The combustion products from the oven, broiler and top section striking and traveling along panel (5) supply heat to canopy (6) when the fan is not in operation. When the fan is operating, these products supply heat to canopy (6) as they are drawn through suction chamber (12). Thus heat is supplied to this surface area (canopy 6) both when the fan is in and out of operation so that the top of the canopy may be used for warming dishes and keeping cooked food warm under both of the previously mentioned operating conditions."

200 C.F.M. Air Throughput

Mr. Warren reported that a model of the hood was constructed and installed on a standard model gas range and that the experimental hood and range combination, used in connection with a small multi-vane forward curved blade fan, gave an air throughput of 200 cfm. With this setup, he asserted, the following performance characteristics then were investigated:

Hood's Effect on Oven Performance

In discussing the effect of the hood on oven performance, Mr. Warren reported that four layers of cake were baked in the oven under the following conditions: A standard range model without hood; the same range with hood installed and fan inactive; and the same range with hood installed and fan operating at a throughput of 200 cfm.

"There was no difference in the evenness of browning of the cakes baked under each of the conditions described, as indicated both by visual inspection and by a traverse of the top and bottom surfaces of the cakes with a photoelectric reflectometer."

On oven maintenance rate and combustion performance, Warren gave the following results:

"The installation of the hood on the standard range model without the fan in operation caused the maintenance rate, necesary to maintain an oven temperature of 400 Deg. F. to increase slightly from 5679 Btu per hour to 5772 Btu, which is an increase of only 1.64%. When the hood fan was put in operation at a throughput of 200 c.f.m., the main-

(Continued on page 66)

Annual Meeting, Gas Appliance Manufacturers Assn.

NEW enlarged promotional programs, expanding marketing and statistical activities designed to create new markets and reduce sales costs, plans to aid dealers in increasing their sales, and greater emphasis on the L-P gas potential market, highlighted the Thirteenth Annual Meeting of the Gas Appliance Manufacturers Association held at the Drake Hotel in Chicago on April 5, 6 and 7.

While the majority of manufacturers stated that the continuing steel shortages may prevent increased production necessary to meet consumer demand in 1948, the 250 delegates present expressed optimism over the sales and production of gas appliances and equipment.

Stating that the buying public is still in need of gas appliances in volume, Hudson W. Reed, President of the American Gas Association and President of the Philadelphia Gas Works Company, advocated lowered manufacturing costs wherever possible, and the cutting down of excessive mark-ups. He urged greater concentration on the study of market conditions and sales techniques.

President of the Gas Appliance Manufacturers Association, John A. Robertshaw, also President of the Robertshaw-Fulton Controls Company, stated that manufacturers were handicapped by manufacturing inefficiencies of parts producers. He commented on the field of industrial relations and stated that labor and management relations are improving.

H. Leigh Whitelaw, Managing director of the Association, reported that the Association now has the largest membership in its history with 525 manufacturers of gas appliances and equipment. He highlighted the efforts being made by gas utilities and pipe line companies to obtain the steel requirements for the industry.

L. A. Brand, Vice-President of the Empire Stove Company, emphasized the conflicting codes and regulations which various state and municipal authorities were adopting for L-P gas regulations, and urged uniformity in regulations so as to enable all phases of the gas industry to provide the most effective service.

Of special interest to delegates present, was the announcement of GAMA's enlarged statistical activities which will provide sales of appliances through 641 trading areas, and more complete reporting of appliance sales. Marketing committees announced plans which are aimed at eliminating the peak buying periods and lengthening the buying season for various appliances.

Water heating, range and refrigeration manufacturers announced substantially increased industry promotional budgets and activities.

Newly elected officials who will take office in October, 1948, are as follows:

Newly Elected Officers and Division Chairmen 1948-49

President:—Frank J. Nugent, Bryant Heater Company, Cleveland, Ohio.

First Vice President:—Stanley H. Hobson, President, Geo. D. Roper Corporation, Rockford, Ill.

Second Vice President:—Frederic O. Hess, President, Selas Corporation of America, Philadelphia, Pennsylvania.

Treasurer: — John Van Norden, Secretary, American Meter Company, New York.

Elected to Board of Directors:—Frank H. Adams, President, Surface Combustion Corporation; Nicholas R. Feltes, Bastian-Morley Company, Incorporated.

Division and Group Chairmen

Controls and Related Accessories Division:—John A. Wolff, Sales Manager, Milwaukee Gas Specialty Company.

Direct Heating Equipment Division:—L. O. Reese, Vice President and General Manager, Armstrong Products Corporation.

Domestic Gas Range Division:—W. Frank Roberts, President, Standard Gas Equipment Corporation.

"CP" Manufacturers Group:—A. B. Ritzenthaler, Vice President, The Tappan Stove Company.

Gas House Heating and Air Conditioning Equipment Division:—Frank L. Meyer, President The Meyer Furnace Company.

Gas Air Conditioning Group:—John K. Knighton, Manager of Sales, Servel, Incorporated.

Gas Boiler Group:—C. L. Hewitt, Jr., General Sales Manager, L. J. Mueller Furnace Company.

Gas Conversion Burner Group:—E. A. Norman, Jr., President, Norman Products Company.

Gas Furnace Group:—Keith T. Davis, Chief Engineer, Bryant Heater Company.

Gas Meter and Regulator Division:—A. F. Benson, Vice President in Charge of Production, American Meter Company.

Gas Valve Division:—Philip S. Harper, President, Harper-Wyman Company.

Gas Water Heater Division:—Leland M. Feigel, Sales Manager, Water Heater Division, Servel, Incorporated.

Hotel, Restaurant and Commercial Gas Equipment Division:—Walter H. Rudolph, President, Savory Equipment, Inc.

Industrial Gas Equipment Division:—Alvin M. Stock, Partlow Corporation, New York.

Frank J. Nugent

Stanley H. Hobson

Frederic O. Hess

John Van Norden

Industrial and Commercial Gas Sales Conference

THE 1948 A.G.A. Conference on Industrial and Commercial Gas, sponsored by the Industrial and Commercial Gas Section, American Gas Association, was not only the most successful ever held, but was the first Conference to be held on Canadian soil.

For three days, April 7, 8 and 9, Section members from Canada and all over the United States met in Windsor, Ontario, to hear outstanding speakers present papers on many phases of the gas industry. One of the most significant factors contributing to the success of the Conference was the cooperation of the local gas company acting as host and is best exemplified by a quotation from the resolution adopted by the assembled gas men at the final session:

"Therefore, be it resolved, that we, the Industrial and Commercial Gas Section of the American Gas Association go on record as expressing our deep thanks to the Union Gas Company of Canada, Limited, and the Windsor Gas Company, their management and personnel for their kindness, generosity and effective assistance in making this Sales Conference the success it has been."

"Be it further resolved that this resolution be recorded in the proceedings of this meeting."

Thursday, April 8, witnessed the attendance of the more than 200 who registered for the Conference. On this day, papers of a general nature were presented, and the formal luncheon held. It was at this luncheon that Col. Thomas Weir, President of the Windsor Gas Company and General Manager of the Union Gas Company of Canada, Limited, welcomed the delegates to Canada. Alderman Bradley welcomed the assembled gas men to Windsor in the name of His Worship the Mayor. These two gracious gestures were acknowledged by A.G.A. First Vice President, Robert W. Hendee.

The papers presented during the general sessions of interest to both Industrial and Commercial Gas men were well received. "Let's Take A Look At Research" by Eugene D. Milener gave the members an insight to what is taking place in gas research and what the industry can look forward to in the future to meet competition and to further the progress of gas utilization.

Some of the difficulties involved in building up uniform restaurant sanitation requirements were very ably set forth by Walter F. Snyder, Executive Director of The National Sanitation Foundation.

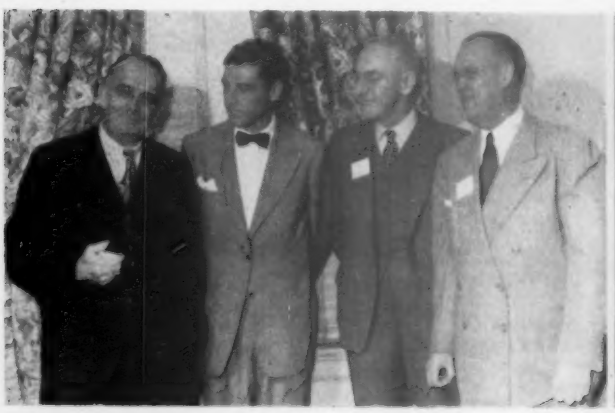
Sydney Alling, speaking for Robert E. Ginna, Vice President, Rochester Gas and Electric Corporation gave everyone something to think about regarding electric competition. He said, "In meeting the competition of the electric industry in the commercial and industrial market, I believe an aggressive offense is the best defense. We should study the fields where gas is vulnerable and take steps to meet competition there." He concluded that the industry should, "Furnish adequate and reliable gas service. Know your market . . . and avoid complacency about your business. Gas has got it! Let's keep it! But look out for Reddy Kilowatt!"

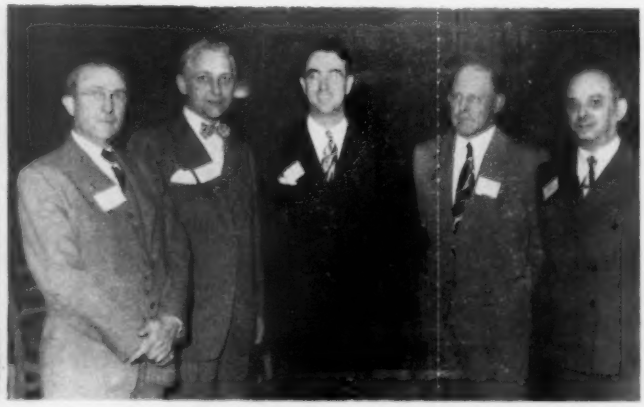
The need for "Revitalizing The Sales Force" was set forth in an interesting manner by Arnold Michelson, Vice President, Minneapolis-Honeywell Regulator Company. He commented on the fact that in these days of happy selling, management was prone to let sales training fall by the wayside. He said, "We all have heard a cry for the return to old-fashioned selling. In my books, that's so much bunk. What we actually need is a renaissance—a movement for new-fashioned selling—selling that carries force, persuasion and conviction. We need a recasting of sales methods in the light of today's requirements. The hues, tones and intensity of the market are different, and what sold gas yesterday may be selling oil or electricity today."

The other two days of the Conference were set aside for specific activities of the Section. Wednesday, April 7, was Industrial Gas Day when several highly technical papers were presented by speakers both in and outside of the gas industry.

One of the most significant Research Reports issued this year is that on Project IGR-58 which has to do with the advantages and disadvantages of induction heating in relation to industrial gas heating. A comprehensive summary of the report was presented by George A. Uhlmeyer, Iowa-Illinois Gas & Electric

LUNCHEON AND CONFERENCE SPEAKERS: Left to Right:—Rev. Norman Rawson—Hamilton, Ontario; Leon Ourusoff—Chrmn. Industrial and Commercial Gas Section, Washington, D. C.; Col. Thomas Weir—Gen. Mgr. Union Gas Co. of Canada Ltd., Chatham, Ontario; Robert W. Hendee—1st Vice Pres. American Gas Association, Colorado Springs, Colorado; P. R. Dreger—Peoples Gas Light & Coke Co., Chicago, Illinois; George A. Uhlmeyer—Iowa-Illinois Gas & Electric Co., Rock Island, Ill.; Robert Talmage—Norwalk, Conn.; Floyd E. Harris—General Motors Corp., Flint, Michigan; S. L. Case—Battelle Memorial Institute, Columbus, Ohio.





Co., Rock Island, Illinois, and followed by a discussion led by S. L. Case, Battelle Memorial Institute, in which they both emphasized the advantages and claimed advantages of induction heating and how they could be met by direct high speed gas heating utilizing special equipment. They further stated that gas heating could easily meet production speeds with equipment that is half the investment cost of induction heating and with further significant savings in operating and maintenance.

Of the really technical papers presented at the Conference were those on Industrial Paint Drying by Paul O. Blackmore, Interchemical Corporation, Cincinnati, Ohio, and H. R. Clauser, Associate Editor, MATERIALS AND METHODS, New York, N. Y.

Herman Gehnrich of Woodside, New York, the well known manufacturer of industrial ovens, told the Conference about a comparatively new use for industrial ovens in the field of curing and smoking meats and meat products.

Heat Treating Baths, their proper use, advantages and disadvantages, were discussed in a paper by Dr. Haig Solakian, Guilford, Connecticut.

The same procedure was followed on Friday, April 9, Commercial Gas Day when several outstanding talks were given by leaders in their respective fields.

Everyone was in Hot Water at the morning session which was led off by Harry B. Wilson, The Brooklyn Union Gas Company, in one of the finest papers yet presented on fairly recent development—the self service laundry. Gas men who have them in their territory or have prospects will want this informative document in which Mr. Wilson describes an economizer which utilizes heat from waste water to pre-heat incoming water. Then, L. J. Fretwell, Oklahoma Natural Gas Company, Tulsa, Oklahoma, followed with his "Hot Water A La Carte" in which he outlined the various "musts" for a gas man to know about the sizing of heaters for hot water service in a public feeding establishment.

The afternoon session was given over to a forum on Appliance Servicing. This is a subject which should be brought to the attention of gas company management, manufacturers, and dealers in heavy duty gas cooking equipment. Until the responsibility for service is resolved, the problem of the proper functioning of gas appliances will still be with us. The several views on this subject were most ably presented by:

A Sales Supervisor, R. D. MacMahon, Southern California Gas Company, Los Angeles, Calif.

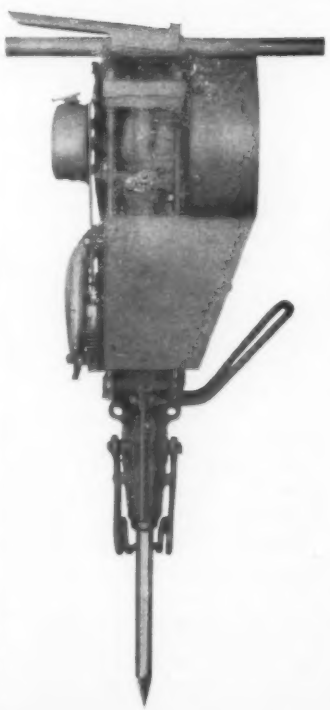
An Appliance Manufacturer, D. J. Brogan, The G. S. Blodgett Company, Inc., Burlington, Vt.

A Service Supervisor, R. G. Juergens, The East Ohio Gas Company, Cleveland, Ohio.

Carbon Dioxide From Natural Gas

Work was started in March by the Parkhill-Wade Co. of Los Angeles on the construction of a new plant for the extraction of carbon dioxide from natural gas on the Battles Lease site, just south of Santa Maria, Calif., for the Union Oil Company. Cost of the project is estimated at $450,000. Plans were prepared by the Girbler Corporation, engineers, of Louisville, Ky. Girbler Co. is also preparing plans for a new plant to make dry ice from carbon dioxide.

POWER PLUS!
THAT'S SYNTRON



100% Self-Contained
Gasoline Hammer
PAVING BREAKERS

BUSTING Concrete
CUTTING Asphalt
DIGGING Shale and Clay
TAMPING Backfill

Self-contained units, with a single cylinder engine at top of hammer and having two pistons. One piston moving the flywheel magneto and fan—the other a free piston moved by the tremendous explosive force generated in the cylinder, striking 2,000 blows per minute.

Write for illustrated folder

SYNTRON CO.
920 Lexington Homer City, Pa.

Annual Meeting Gas Meters Assn. of Florida-Georgia

ON APRIL 8th, with perfect skies and ocean breezes the 13th annual meeting of the Gas Meters Association of Florida-Georgia was held at the celebrated Hollywood Beach Hotel. In the lobby members and friends gathered to greet one another and to welcome new ones.

A meeting of manufacturers representatives took place at which Bill Guitteau was elected to serve as Director for the coming year as their representative.

New directors of the Association elected were Duncan Crawford, Executive V.P., W. L. Lee, Vice Pres. of Atlanta Gas Light Co., Atlanta, Ga. and Mr. A. J. Lawlor, Vice Pres. Southern Gas & Elec. Co., Bradenton, Florida.

After an enjoyable breakfast on the terrace, members attended the first session presided over by H. P. Thomas, Pres. Delegates were welcomed by the Mayor of Hollywood and the city turned over to them. James W. Smith, Mayor of Albany, Ga., also addressed the delegates.

Mr. Thomas presented C. D. Littlefield, Introduction General Chairman, who in turn introduced W. M. Sutton, Chairman, Sales Section. Mr. Sutton presented Fred Habegger, advertising manager, Bryant Heater Co., who spoke on "Sales are the Payoff" and illustrated his points with a moving picture which made attending sales men prospect conscious.

Joe Frink, Chairman Technical Section introduced A. A. Turner, Carborundum Co., New York City who gave an interesting talk as did Tom Gilbert of Cutler Hammer Co., followed by a general discussion. Many enlightening questions and answers were exchanged.

After luncheon and refreshed by ocean breezes, members returned fully relaxed for the afternoon session, which opened with the reading of a paper "Bryant Service" by Joseph A. Cerny, manager sales engineering dept., Bryant Heater Co., followed by Frank Nugent, Pres. elect G.A.M.A. and sales promotion Mgr. Bryant Heater Co., on "Gas Has Got It." (See page 39 this issue)

The Friendship room was conducted under the direction of E. M. Fondersmith, Chairman of Manufacturers group. Entertainment was supplied by courtesy of manufacturers representatives, and their hospitality was well received.

The meeting on the 10th opened with the reading of a paper on "Sales Manufacturers' Problems" by John K. Knighton, Servel Inc., followed by Malcolm B. Mackay, The Burkay Co., on "New Requirements for Restaurants."

Carl Wolf, managing director American Gas Association spoke on "Sales Promotion Clinic." Views and practices were offered by individuals representing gas companies. At the final session Mr. E. P. Noppel, Ebasco Services, New York, spoke on "What's Ahead."

"Bill" Woods, conducted the technical session. H. P. Thomas, J. W. Owen, Joe Frink and C. D. Littlefield called on members to discuss their individual problems. At the annual banquet the newly chosen officers were installed. H. P. Thomas, Pres. presided and Paul Greenway functioned with his camera.

Officers elected for the coming year were C. J. Noda, Pres. to succeed H. P. Thomas who automatically becomes Vice Pres. and J. W. Owen, re-elected Secretary-Treasurer. Paul Greenway continues as Editor, "The Meter." There were approximately 150 registrations.

Door prizes for members attending meetings were a radio, travel bag and aluminum set.

The ladies were entertained by a committee including Mmes. H. P. Thomas, Geo. Munt, W. L. Clement, Buel G. Duncan, E. L. Linthicum, A. H. Stack and C. J. Noda who arranged the sightseeing trips, bridge parties and garden tours and a special luncheon on April 10th in the main dining room of the hotel. Many door prizes were given the fortunate winners.

During the meeting new friends had become old friends and all are eagerly awaiting the next convention.

Among those snapped by the candid camera man at the Florida-Georgia Gas Meters Association. Left to right:—Al Stack, Tampa Gas Co.; Buell Duncan, South Atlantic Gas Co., Orlando; Dick Berry, General Gas Light Co.; Al Harris, Combustion Engineering Co.; Tim Timberlake, Combustion Engineering Co.; Pat Thomas, Peoples Water & Gas Co., Miami Beach (Retiring President and Vice President-Elect); Cliff Noda, St. Augustine Gas Co. (President-elect); Ted Bergman, Florida Power & Light Co.; and Ed Noppel, Ebasco Services.

Oil and Gas Operators Convene in Wichita

Independent oil and gas operators from all of the nation's producing areas were represented at the Mid-Year Meeting of Directors of the Independent Petroleum Association of America held in Wichita, Kansas, April 26-27. Discussion of industry problems occupied the two-day meet with preliminary committee meetings on April 25.

Among the prominent speakers who addressed the representatives were J. Frank Rushton, The Rushton Company, Jacksonville, Florida, who spoke at the dinner meeting, Monday, on the subject "Maintaining Individualism in the United States." J. P. Jones, director of production, Bradford District Producers Association, Bradford, Pennsylvania, discussed "A National Secondary Recovery Program" and R. V. Hughes, also of Bradford, spoke on "Research in Secondary Recovery." A panel discussion on the "Economics of Secondary Recovery" with R. C. Earlougher, Earlougher Engineering Company, Tulsa, as chairman, and including outstanding authorities on this phase of development, were a feature of the early sessions.

News of the Gas Industry

Aggressive Selling, Theme of Mid-West Regional Gas Sales Conference

Necessity for aggressive sales training and carefully devised sales and promotion plans was the major theme of the excellent program of the Mid-West Regional Gas Sales Conference, sponsored by the American Gas Association, at the Edgewater Beach Hotel, Chicago, March 30 and 31, and April 1. Much credit is due to B. H. Wittmann, General Sales Manager, Peoples Gas Light & Coke Co., Chicago, as chairman of the Conference and to H. D. Valentine, Sales Promotion Manager of Peoples Gas Light & Coke Co., as co-ordinator, for the outstanding quality of the program and the effectiveness of the speakers on the program.

From the opening session of the conference on Tuesday morning through to the sales clinic which closed the meetings on Thursday, more than 600 sales executives from the Mid-west area were treated to frank and analytical discussions of sales and economic problems of the day by experts in various fields from within and without the gas industry.

Mr. Wittmann opened the conference with a clear-cut analysis of gas industry sales problems of today. Pointing out the strong trend in competitive industries to subsidize sales through direct payment of installation costs, he reported the results of successful sales and promotional efforts in his own territory despite the subsidies of competing fuels. Other speakers on the Tuesday session included Edward A. McFaul, Northwestern University who presented some fallacies in thinking; Frank W. Williams, Residential Gas Section, A.G.A., whose talk: "It's time to Get Ready To Sell Again," offered sales executives considerable food for thought, and Howard D. Valentine, Peoples Gas Light & Coke Co., who traced the decline of various empires because of the transition from the hardships of pioneering to the ease of having achieved objectives, with a warning to the gas industry that complacency because of its present position in the market might well lead to gradual decline in the competitive field.

Conference Highlights were reviewed by Edward S. Finerty, of Peoples Gas Light & Coke Co., at the afternoon session on Tuesday. Eleanor M. Morrison, Michigan Consolidated Gas Co. president at a forum of Home Service Directors in an interesting discussion on programs for home service girls. R. J. Canniff, Servel Inc., and an able troup of thespians, presented a fast-moving, amusing and informative skit covering Servel's gas refrigeration plans for 1948.

W. L. Hayes, Montana-Dakota Utilities Company, newly-elected chairman of the Mid-West Regional Sales Conference, presided at the Wednesday session. The forth-coming co-ordinated gas water heater campaign was presented by W. D. Williams, Public Service Electric and Gas Company, Newark, N. J.

Thursday morning's session, under chairmanship of R. J. Vandagriff, Laclede Gas Light Co., St. Louis, was given over to discussion of sales problems.

At the sales clinic on Thursday afternoon, about thirty sales executievs from different areas within the Mid-West Region, were brought up to date on the sales and promotional plans of the American Gas Association.

S. Western Personnel Conference of A.G.A.

Under the able chairmanship of Willard G. Wiegel, Personnel Director of Lone Star Gas Company, the American Gas Association Southwestern Personnel Conference held another one of its worthwhile sessions on March 23 at, the Galvez Hotel, Galveston, Texas. No formal program was arranged and the session consisted of the discussion of specific problems facing gas companies of the area represented at the meeting.

While a general appreciation of the importance of keeping supervisors informed was evidenced, most of the companies represented at the Conference seemed to be searching for methods of doing a more thorough job. An intensely interesting and informative discussion of the problem disclosed two schools of thought. The first believed that supervisors cannot be expected to know the details of such matters as an involved pension plan, a group insurance plan or a hospitalization plan to satisfactorily explain the details to employees. The other school seemed to believe that it was advisable, if not necessary, to expect supervisors to explain such matters to their men.

Wendell R. Horsley, Director of Placement and Personnel Relations of A. & M. College of Texas, reported the demand for college graduates still exceeds the supply and each graduate has a choice of several offers. He believed the graduates are more interested in the future possibilities of a position than they are in the entrance salary.

The next meeting of the group will be held in Birmingham, Alabama, on Monday, June 7, and the Secretary of the Conference, Robert P. Marshall, Personnel Director of Memphis Natural Gas Company, will be glad to send any gas company in the area an invitation to be represented at the Conference.

CONVENTION CALENDAR

May

4-5 *Natural Gas Department, A.G.A.*, Rice Hotel, Houston, Texas.

18-20 *Pennsylvania Gas Association, Annual Meeting*, Galen Hall, Wernersville, Pa.

24-25 *New York—New Jersey Regional Gas Sales Conference*, Westchester Country Club, Rye, N. Y.

24-26 *Production and Chemical Conference*, Berkeley - Carteret Hotel, Asbury Park, N. J.

27-28 *Natural Gas and Petroleum Association of Canada*, General Brock Hotel, Niagara Falls, Ontario.

31-June 2. *Gas Appliances Short Course*, University of Tulsa, Oklahoma.

June

1-6 *Liquefied Petroleum Gas Assn.* Annual Convention, Sacramento, California. Trade Show with exhibits June 3-6.

2-4 *Annual Short Course, Gas Technology*, Texas College of Arts and Industries, Kingsville, Texas.

30-July 3 *Canadian Gas Assn.* Annual Convention. Jasper Park Lodge, Jasper, Alberta.

July

11-12 *Michigan Gas Association*, Joint Meeting with Mich. Elec. Lt. Assn., Grand Hotel, Mackinac Island, Mich.

September

14-16 *Pacific Coast Gas Assn.*, Annual Convention, Santa Cruz, Calif.

October

4-8 *American Gas Assn.* Annual Convention and GAMA Exhibit, Atlantic City, N. J.

14-15 *Texas Mid-Continent Oil and Gas Assn.*, Annual Meeting, Fort Worth.

A CORRECTION

In the L. P. Gas Article page 19 in the April issue, the table of butane-propane mixtures, pentanes, etc., should read:

1940	313,456 M gals.
1945	1,276,766 M gals.
1946	1,705,282 M gals.

This revision is obvious to the average reader interested in the subject. Typographical errors do occur in spite of careful proof-reading.

Wisconsin Utilities Assn. Nominates 1948-49 Officers

The General Nominating Committee has selected the following nominees for officers of the Wisconsin Utilities Association for the fiscal year beginning May 1:

President: W. E. Schubert, vice-president and general manager, Wisconsin Michigan Power Co.

Vice-President: Carl E. Altenbern, vice-president and general manager, Wis. Southern Gas Co.

Treasurer: Paul J. Imse, secretary-treasurer, Milwaukee Gas Light Co.

Mr. Schubert is the present vice president of the Association.

The General Nominating Committee members were B. E. Miller, chairman, M. H. Montross and S. B. Sherman.

Liquid Petroleum Gas International Trade Show

"L. P. Gas in Action" is the theme of the L. P. International Trade Show to be held at the State Fair Grounds, Sacramento, Calif., following the L. P. Gas Association meeting. Dates for the Trade Show are June 3-6.

This show, the first of its kind, will bring together at one point the members of the L. P. Gas industry, the manufacturers who supply them with equipment and appliances, and the consuming public.

The 1948 annual convention of the Liquefied Petroleum Gas Association will be held simultaneously with the International Trade Show. This will be an outstanding meeting which will feature prominent speakers thoroughly conversant with their particular specialties, and it will afford an excellent opportunity for a general "get together."

It will be an operating exhibit as L. P. Gas and Power will be available throughout.

Offices of the Trade Show are at 3743 Alameda Ave., Oakland, Cal.

Sacramento Hotels have set aside 2200 rooms which the arrangements committee believes will be adequate to accommodate the 3500 to 4000 guests which are anticipated.

Large Increase in Propane Sales by New Jersey Corp'n.

Sales of Suburban Propane Gas Corporation, Whippany, N. J., in 1947 increased 36.8 per cent over 1946, President Mark Anton said recently in his annual report to stockholders.

Total sales and other income for the two-year old corporation amounted to $7,772,634.64 producing net income after Federal Income Taxes of $831,339.45. This compares with 1946 net sales of $5,673,614.94 and net income of $602,837.06.

The corporation, with general offices in Whippany, New Jersey, operates in nine Atlantic seaboard states distributing propane.

Byproduct Coke Ovens for Peoples Gas Light and Coke Co.

Peoples Gas Light and Coke Company, Chicago, has awarded a contract for the erection of a battery of 51 byproduct underjet coke ovens at its Crawford Avenue plant to Koppers Company, Inc., of Pittsburgh, Pa.

The ovens to be built are unique in that they will be constructed so that natural gas, producer gas, propane gas, butane gas, or coke oven gas can be used to heat them. Originally, natural gas will be used. The new ovens will increase the present carbonizing capacity about 40%.

Jacob B. Jones Honored for 50 Years of Service

The employees of the Bridgeton Gas Light Company, Bridgeton, N. J., honored Jacob B. Jones, superintendent and treasurer, at a testimonial dinner April 1st on the occasion of his 50th anniversary with the firm. The dinner was held at the Cumberland Hotel, Bridgeton. Former Judge LeRoy W. Loder, President of the company, was toastmaster.

J. B. Jones

In response to several previous speakers, Mr. Jones expressed his appreciation and recalled his first business venture at the age of four.

"I borrowed two cents from my mother and bought four copies of the Evening News," he said. "I sold the four papers, paid back the two cents and then I was in business."

He said those years as a newsboy dealing with the public helped him in later life. He named some of the old-time employees who had been with him throughout the years and spoke affectionately of the entire organization. These included Leonard Watson, 41 years with the company, now retired; Robert Birch, 38 years, just recently retired; Reuban Horner, 42 years; Cort Pierce, and Seo DuBois, also long-time employees. He welcomed Mrs. William Harwood, for many years associated in the business office.

FOR B.T.U.'s It's BEST To USE

SENECA COKE

SENECA WATER GAS COKE is high in fixed carbon, making it excellent for use in the manufacture of water gas. It has a low ash and a high fusing point.

Call or write NOW. A SENECA sales agent will appreciate the opportunity to go into details and discuss price with you. At all times SENECA Service is Prompt, Efficient and Courteous.

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Western Society of Engineers Moves To New Headquarters

The establishment of a research center where engineering organizations may gather, will shortly become a reality when the Western Society of Engineers opens its new headquarters at 84 East Randolph Street, May 1.

The 79-year-old organization has taken the lead in establishing an engineering and scientific center in Chicago. Other organizations of similar interests and professional standards will be invited to share in the expanded headquarters.

W. V. Kahler, president of the 79-year-old organization, has estimated that the society will spend approximately $100,000 in renovating and equipping the center. When finished the center will include meeting rooms, offices, lounges and dining facilities.

Inst. of Gas Technology Graduate Joins Brooklyn Union

Eugene H. Luntey recently joined the staff of the Development and Planning Department as a junior engineer. Mr. Luntey reecived his B.S. in Chemical Engineering at the University of Idaho and upon concluding his undergraduate studies in 1943, was awarded a graduate fellowship at the Institute of Gas Technology. He is the first I.G.T. trained man to be employed by the company.

Philadelphia "Quarter Century Club" Inducts 273 New Members

More than 1600 members of the Philadelphia Electric Company's "Quarter-Century Club," composed of employees with twenty-five or more years of service with the utility, were feted April 8, at a dinner. The occasion marked the twenty-second annual dinner of the group, the biggest annual event on the Company's calendar. The evening was highlighted by the formal induction of 273 new members into the Club, one of the oldest and largest organizations of its kind.

Lauding the group, Horace P. Liversidge, chairman of the board of the utility, said, "Not only is this group rich in tradition, but without them it would not have been possible for the Philadelphia Electric Company to maintain its enviable record of service reliability." Mr. Liversidge also paid special tribute to the "baby members" of the organization, several of whom are veterans of World War II.

Company officials present were, in addition to Mr. Liversidge, Company president H. B. Bryans, executive vice-president N. E. Funk, and vice-presidents Edward Portez, George E. Whitwell, George R. Conover, R. G. Rincliffe, and Philadelphia Electric's general counsel, Vincent P. McDevitt.

Clifford Winner, president of the club and treasurer of the utility, presided at the meeting. The other officers of the "Quarter Century Club" are: Joseph M. Barnes, senior vice-president; John Vorndran, second vice-president; Clara H. Zillessen, third vice-president; B. Edward Uphoff, fourth vice-president; and Victor H. Jones, secretary-treasurer.

Committee for Short Course in Gas Technology

An advisory committee of industrialists has been chosen for the Third Annual Short Course in Gas Technology, Dr. E. N. Jones, president of Texas A & I College, has announced.

Sponsored by the Southern Gas Association, the short course will be presented by A & I June 2, 3, and 4. Dr. Frank H. Dotterweich, director of the A & I engineering division, is administrative committee chairman for the third year.

Chester L. May of the Lone Star Gas Corp. is chairman of the advisory committee.

Other advisory committee members are A. D. Green, United Gas Pipe Line Co.; Frank S. Kelly, Jr., Arkansas Louisiana Gas Co.; J. P. Bristow, Tennessee Gas Transmission Co.; J. C. Flanagan, United Gas Corp.; A. L. Kleberg, King Ranch; John Lynch, LaGloria Corp.; Harold E. Meade, New Orleans Public Service, Inc.; R. W. Reeves, Oklahoma Natural Gas Co.; Frank C. Smith, Houston Natural Gas Corp.; Dean Strickland, United Gas Corp.; Col. L. O. Vogelsang, Rio Grande Valley Gas Co.; R. E. Wertz, Amarillo Gas Co.; C. R. Williams, Chicago Corp.; W. Lee Woodward, Zenith Gas Co.; and C. H. Zachry, Southern Union Gas Co.

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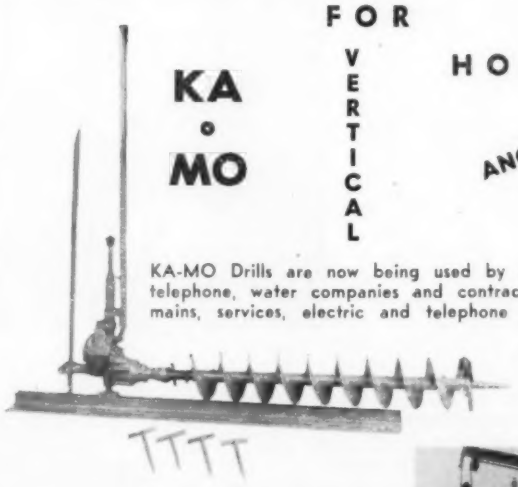
VERTICAL HORIZONTAL ANGULAR

EARTH BORING

KA-MO Drills are now being used by many leading gas, electric, telephone, water companies and contractors for installation of gas mains, services, electric and telephone conduits, water mains and services. These installations are under streets, alleys, parkways, lawns and railroad tracks.



Drills are furnished in 4' lengths unless otherwise specified.

A revolutionary new method of uncovering mains, joints, for service work, testing for leaks etc. Note small boom on side of truck for maneuverability and no pay load space waste.
This has unusual applications in Cathodic Pipe Protection Procedures.

Showing the small amount and lightness of equipment necessary for this type work.

ADVANTAGES

(1) Fast installation under streets, alleys, sidewalks and driveways, with no breaking of concrete or interruption of traffic.
(2) Installation of services without disturbing lawns.
(3) Drills a DRY hole.
(4) When properly started drills a straight hole.
(5) Compact, simple, light equipment.
(6) Range in diameter from 3" to 17".
(7) Can be air or electically driven.
(8) A flexible piece of equipment which is extremely portable and does not need any heavy auxiliary equipment such as special trucks or cranes.

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W. D. Crouch to Retire

W. D. Crouch

W. D. Crouch, General Manager of the Commercial and Industrial Division of the Robertshaw - Fulton Controls Company, Youngwood, Pa., has announced his intention to retire on July 31, 1948, after 30 years of service.

"Walt," as he is affectionately known among his many friends in the industry, became associated with Robertshaw in 1918 when the company was known as the Robertshaw Thermostat Company. He is one of the pioneers in the thermostat field. The use of thermostats on commercial and industrial equipment was in its infancy when he joined the company. Today, the universal acceptance of thermostatic controls and their wide use as standard equipment on practically all appliances of this type are, in a large measure, due to the sales engineering and sales promotional job he has done, for he is recognized as an outstanding authority on thermostats and their proper application to all types of cooking and heating equipment.

After retiring "Walt" will live in Kendallville, Indiana where he has a new home under construction.

Responsibilities as General Manager of the Commercial and Industrial Division will be assumed by E. J. Horton, Assistant to President of Robertshaw-Fulton Controls Company at Youngwood, Pennsylvania, after Mr. Crouch's retirement.

Peacock with H. Emerson Thomas and Associates

Mr. Paul E. Peacock, Jr., manager of the Martinsburg Gas and Heating Co., Martinsburg, W. Va., has resigned from that position. He will move to Westfield, N. J., where he will be associated with H. Emerson Thomas and Associates.

Paul E. Peacock Jr.

Mr. Peacock has had varied experience over the past eighteen years in the utility and LP Gas field, having engineered and installed many LP Gas plants and having operated manufactured and LP Gas properties. During the time of conversion from water gas to natural gas, he was assistant division gas engineer of the utility at Waterloo, Iowa.

H. Emerson Thomas and Associates announce a program of expanding engineering and contracting services on LP gases for the industry.

Fluor Mid Continent Offices Established in Houston

A new division of The Fluor Corporation, Ltd., the Mid Continent Gas-Gasoline Division, has been set up with offices in the M & M Building, Houston, Texas, with Ernest Moncrief, Manager in charge. This new Division now is actively engaged in its new quarters.

This Division will handle engineering, drafting, purchasing and accounting, together with construction, using Fluor's regular field personnel, on gas-gasoline, cycling and dehydration plants in the region east of the Rocky Mountains.

Along with Mr. Ernest Moncrief, the following Fluor Personnel is being transferred, to complement and integrate the functions of this new Division: J. L. Tathwell, Engineering Department; William F. Chapin, Process Department; Tom H. Hanks, Accounting Department; and C. E. Richardson, Purchasing Department.

Hydro-Scavenger

DRIP TRUCK

Removes Condensate From Drips

28" Hg Vacuum For Loading

25 Lbs. Pneumatic Pressure For Unloading

The Material Does Not Go Through The Pump

A Flexible Machine! Available ANY SIZE!

Special Features Easily Incorporated

Write For Additional Information

This Trailer

Utilizes Vacuum and Pressure Alternately For Cleaning Stubborn Service Lead Stoppages.

A Money Saver!

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Gas Industry Forms Committee On Economics

H. Carl Wolf, Managing Director of the American Gas Association has announced the appointment of a Committee of Economics, with R. E. Ginna, Vice-President, Rochester Gas & Electric Corporation, Rochester, N. Y., as Chairman.

The new committee which was formed as a result of the activities of the former Committee on Development and Use of Gas Industry Statistics, of which Mr. Ginna was Chairman, and the Committee on Market and Economic Research, headed by E. H. Eacker, Vice-President, Boston Consolidated Gas Company, will coordinate the activities of A.G.A. committees, Bureaus and personnel engaged in studies of an economic nature.

Included are proposed studies in such related fields as marketing research and statistics; surveys at intervals of the needs of the gas utility industry for research in economic matters; and advising with officers, Bureaus and personnel of the Association regarding economic aspects of the gas utility industry.

At the initial meeting in Washington, D. C., it wac decided that in view of the wide scope of economic fields to be covered, the main committee would restrict its activities to broad questions of policy. Specific problems would be analyzed and recommended upon by three principal subcommittees, with a chairman appointed from within the main committee but with members selected from outside the committee.

Harry A. Weitzman of Rochester, was appointed chairman of the Sub-committee on Statistics. F. B. Jones of Pittsburgh, was named chairman of the Subcommittee on Marketing and Sales Problems, and E. W. Morehouse of New York, was appointed chairman of the Subcommittee on Economic Problems.

Central Indiana Gas Co. Names Grey to Anderson Division

J. Chester Grey, Jr., has been named Manager in charge of the Anderson division of the Central Indiana Gas Company succeeding H. Wayne Thornburg, who served as manager of the Anderson division of the company since January 1, 1923, as announced by Guy Henry, President.

Mr. Thornburg will become Director of Public Relations. He has long been a leader in civic affairs and will continue his activities in that line.

Mr. Grey recently joined the Central Indiana Gas Company after having been with the Public Service Electric & Gas Co., in New Jersey since 1931.

Gas Sales for 1947 Reach Peak for Con. Edison, New York

Gas sales in 1947 were the highest ever recorded by Consolidated Edison Company. During the year, 52,071,853,400 cubic feet of gas were sold for a total revenue of $50,073,450. The volume of sales was 9.5 per cent larger than in 1946 and revenues were 6.2 per cent higher.

East Tennessee Natural Gas Co. Appoints G. H. McKay, V.P.

The Board of Directors of the East Tennessee Natural Gas Company has announced the appointment of G. H. McKay of Houston, Texas as the company's new Executive Vice-President. Mr. McKay has resigned as Vice-President of the Tennessee Gas Transmission Company of Houston to accept the post.

The East Tennessee company has a certificate to build a natural gas transmission system to serve Knoxville and Chattanooga, and towns in Middle Tennessee including Cleveland, Murfreesboro, Columbia, Lewisburg, Sewanee, Lawrenceburg, Winchester, Waynesboro, Shelbyville, Tracy City, Mount Pleasant, Tullahoma, Manchester, Cowan; and in East Tennessee a number of other towns including Alcoa, Maryville, Lenoir City and Etowah.

As Vice-President of Tennessee Gas Transmission Company in Houston, Mr. McKay was in charge of sales and brings with him a wealth of knowledge and experience in building and administering a gas transmission system.

He has moved from Houston to Chattanooga, where East Tennessee Natural Gas will have its headquarters. Mr. McKay began his duties as of April 15.

Pensacola, Fla. Takes Over Gas Business

Pensacola, Fla., will take over the natural gas business of the city on May 17th. To make the purchases, the city will sell a two million dollar bond issue.

"The Gem of Them All"

COLUMBIA CONVERSION GAS BURNERS

More Popular Than Ever

With Home Owners and Dealers

DEALERS SAY—Columbia Nutipe Burner has a common sense design. Closely duplicates operation of appliance when solid fuel was used. Easy to install. Seldom requires service.

HOME OWNERS SAY—Gives quick heat transfer and earlier delivery of heat to rooms. Has tamper-proof controls and quiet operation.

MODEL P-ZE

shown here is designed for use in warm air furnaces or round type boiler where grates are removed.

Send for free folder giving complete instructions for installing

THE COLUMBIA BURNER CO.

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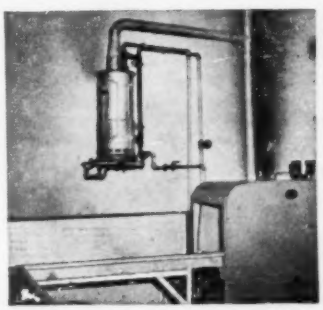
AN ACTUAL INSTALLATION OF THE ONLY THERMOSTATIC-INSTANTANEOUS GAS WATER HEATER



This installation has been operating for the past several years in the large cafeteria of the High School at Orange, Texas. This No. 3 HOTOMATIC is boosting 140° temperature water from a storage tank up to 180 degrees at a rate of about 4 gallons per minute for a large Hobart Dishwasher. Many State Health Departments are requiring 180° sanitary water for Cafes and Cafeterias. Any number of HOTOMATICS can be hooked together to supply large quantities of hot water.

MODELS AVAILABLE

No. 0—40 G.P.H. (60° Rise) House Trailer Size

No. 1—60 G.P.H. (100° Rise) Small Home Size

No. 2—90 G.P.H. (60° Rise) Large Home Size

No. 3—150 G.P.H. (60° Rise) Largest Size

A.G.A. APPROVED CONTROLS Approved by I.G.A. Gas Combustion Engineers

Mfd. by LITTLE GIANT WATER HEATER COMPANY

Write for Folders & Prices. 907-7th St. P.O. Box 1029 Orange, Texas

DOMESTIC GAS SERVICE

With 24,086,000 homes using gas for cooking on December 31, 1947, the gas industry now serves 7,767,000 more homes than on December 31, 1937. This is an increase of 48% over this ten-year period. More than 1,100,000 new cooking customers were added to gas utility and L-P gas distribution systems during 1947 alone.—*G.A.M.A.*

Rockwell Names Bishoff Sales Engineer

E. V. (Gene) Bishoff, Jr., has been appointed to the sales engineering staff for Emco products. The announcement was made by W. R. McLaughlin, Sales Manager of the Pittsburgh Equitable Meter Division of Rockwell Manufacturing Company.

Mr. Bishoff has been assigned specifically to the promotion of Emco gas appliance regulators and flow indicating meters.

He came to Rockwell in November 1946 as a project engineer and has devoted his efforts to engineering and development of the gas appliance line and all related products which this Company manufactures.

National Radiator Co. Elects J. C. Barnes, Sales V.P.

Robert S. Waters, President of The National Radiator Company, Johnstown, Pa., has announced the election of John C. Barnes as Vice President for Sales.

Mr. Barnes was a former Sales Manager of the Company's Washington and Philadelphia Branch Offices, respectively, and has been associated with the firm since 1940.

Prior to becoming affiliated with The National Radiator Company, Mr. Barnes was associated with Montgomery Ward and Company, Inc., in the Engineering Department and later as Assistant Sales Manager of their Baltimore Branch.

Johns-Manville Promotes Frankland and Hough

Appointment of George R. Frankland as Chicago District Manager, Johns-Manville Industrial Products Division, was recently announced by C. G. Dandrow, vice president and general sales manager.

William S. Hough, formerly manager of the Chemical and Aviation sections of the company's Special Industries Department at New York, will assume Mr. Frankland's former duties in Chicago as Assistant District Manager, Industrial Products Division.

Mr. Frankland brings a broad background of 15 years as Assistant District Manager at Chicago to his new post.

Mr. Hough has served in various sales capacities during 22 years with Johns-Manville in New York and Newark, N. J.

GAS EXHIBIT OF P.C.G.A. AT FAIRMONT HOTEL, SAN FRANCISCO

Illustrated here is an exhibit sponsored by the Pacific Coast Gas Association at the annual convention of the California Home Economics Association, which was held in the Fairmont Hotel, San Francisco, March 20 to 23 inclusive.

Inasmuch as the membership of the California Home Economics Association is composed largely of school home economics teachers, the PCGA exhibit was set up largely to show a working unit in a school kitchen, plus a demonstration kitchen as used by home economics teachers. In addition, a small space was devoted to a utility section featuring a clothes dryer, dishwasher, and hot water heater.

The exhibit was staffed by Home Service representatives of Pacific Coast companies who, in addition to attending the convention of the California Home Economics Association, stayed over two additional days to attend the Home Service Workshop of the Pacific Coast Gas Association.

New Color Movie on "Designing Machinery for Arc Welding"

To assist the designer and engineer to use arc welded steel in the design of all types of machinery in many hundreds of different industries, The Lincoln Electric Company has recently released a new movie, "Designing Machinery for Arc Welding."

Based on the experience machinery manufacturers have had in using welded steel fabrication to improve performance and quality while reducing costs, this 16mm sound color movie gives examples of the four fundamental elements of all machinery: bases, wheels, containers and covers. It compares various materials and presents a study of load factors, stresses, rigidity, performance and appearance. It explains how welded design permits freedom of planning, speeds up fabrication, reduces weight and permits greater strength from less material.

The film presents functional approach to design. Its theme is to use "the right material" of only the "right amount" in only the "right places." In other words, to design to meet service requirements exactly at minimum cost.

Servel Issues Giant Ad Poster

Servel, Inc., manufacturers of the gas refrigerator, are making available to their accounts Giant Ad Reprints (19 x 24 inches) of their current national ad, according to R. J. Canniff, Advertising & Sales Promotion Manager for Servel.

This newest advertisement in the Servel 1948 national advertising campaign will appear in the January issue of "American Home" and "Better Homes & Gardens."

It will also appear in the February issue of "American Magazine" and "Woman's Home Companion."

LOW STANDBY INVESTMENT COST

LP GAS CAN GIVE YOU OR YOUR INDUSTRIAL CUSTOMER FLEXIBLE STANDBY SERVICE

LP Gas Specialists for Nearly 20 Years

H. EMERSON THOMAS & ASSOCIATES

Westfield, N. J. Westfield 2-2800

CLEVELAND

"A" TYPE METERS
"B" TYPE METERS
DIAPHRAGMS

Cleveland Gas Meter Co.

ESTABLISHED 1875

2009 Rockwell Ave., Cleveland 14, O. Phone CHerry 2351

Registration Notice Incorporated In Laboratories Symbols

All manufacturers of approved gas appliances and listed accessories recently were advised to incorporate an encircled letter "R" in the trademarked Laboratories Approval Seal and Listing Symbol. The encircled letter, displayed in connection with these symbols, constitutes notice of registration with the U. S. Patent Office, necessary to protect rights to them.

Manufacturers have been supplied with new reproduction proofs of the complete symbols incorporating the change. The encircled "R" is placed between the lower two points of the star on the Approval Seal and at a point within the lower portion of the letter "G" of the Listing Symbol.

Although both symbols have been trademarked for many years, the new procedure was made necessary by enactment of the Lanham Act, which, by federal statute, controls all trademarks, symbols, and other service or certification marks used to identify and distinguish manufactured articles. Application for registration under this act was made some time ago.

Display of both symbols bearing registration notice will be required on and after January 2, 1949. It is understood, however, that existing stocks of name plates on hand at the time of notice to manufacturers may be used up. Due to the smaller size in which the Listing Symbol is often employed and the method of its application to accessories, the encircled letter may be omitted in those cases where it is practically impossible to display it legibly.

A new edition of official marking requirements incorporating the changes in the symbols will be published in the near future.

THE GILD GATHERS IN FLORIDA'S SUNNY CLIME

The Gild of Ancient Supplers held a breakfast meeting at the Hollywood Beach Hotel, Florida, April 10th. The following Gild members were in attendance:
Left to right around the table:—W. L. Plummer, J. F. Evans, Joe A. Mulcare, Mayor; L. T. W. Timberlake, John Mooney, H. B. Pearson, D. L. Sharpe, T. M. Gilbert, Harry Grassman, R. O. Berry, C. E. Williams and William T. Hamilton, Jr.

Unmetered Services

Discussion of billing procedures in cases of unmetered gas services was included in the meeting of the accounting section of Pacific Coast Gas Association held at Los Angeles February 18th and 19th.

Practices as reported, varied considerably among the utilities.

One company has approximately 1,600 flat connections, for which bills are rendered on the basis of billing of the corresponding month of the previous year. All such connections are limited to employee accounts.

Another company renders unmetered service to all new residential consumers unless objections are encountered. Billing is estimated according to the number and types of appliances used.

A third company permits these installations only on certain commercial accounts; since, during the current meter shortage, the larger meters have been the more difficult meters to obtain. Consumption, in these cases, is estimated by a company sales engineer in advance.

All companies enter unmetered services in meter accounting controls in the same manner as if a meter had been set, except that additional accounting is necessary for monthly reports.

Thanks to Braille-like dots devised by Portland Gas & Coke Company for the oven control and timer, home economics classes at the Oregon State School for the Blind can make full use of this new gas range. Frances Fricker of Gasco's home service division is explaining things to a fifth-grader while the superintendent and teacher watch approvingly. Harvey Stanton of the Gas Company devised the controls.

GPM
HYDROZINC
The mark of
unerring dependability
in purification
GAS PURIFYING MATERIALS CO., INC.
3-15 26th Ave.
Long Island City 2, New York

Vegetation Surveys

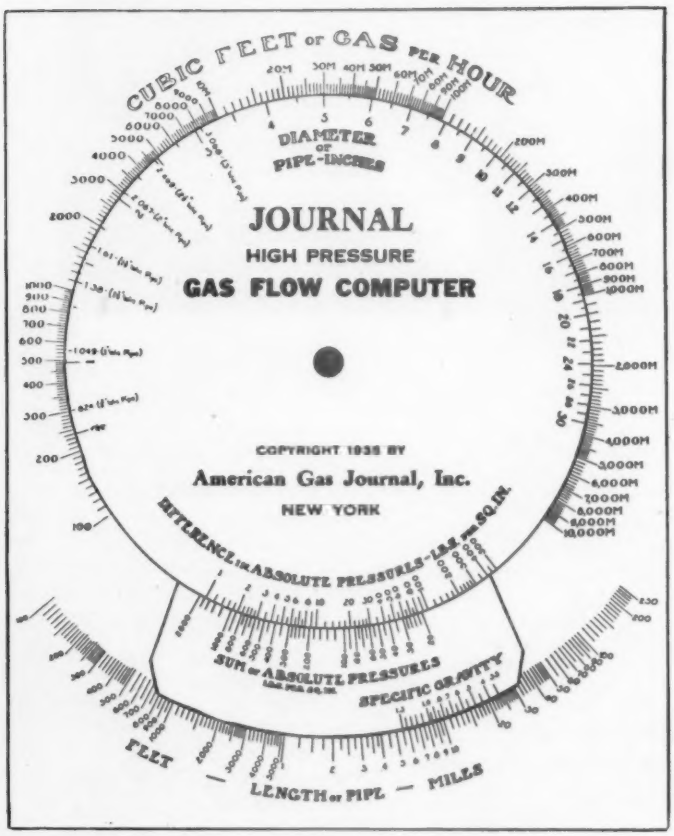
NOW is the Season to arrange for inspection of distribution lines to detect leakages.

Our fully trained personnel is at your service. We can submit a complete report covering locations, source of leaks, severity of the condition and vegetation affected. We can cover any section of your lines or the complete system working on a per diem basis.

Write us regarding rates and schedules.

VEGETATION SURVEY ASSOCIATES
53 Park Place, N. Y. 7, N. Y.

"Journal" Gas Flow Computers



These Improved Gas Flow Computers are available in durable celluloid, encased in a convenient leatherette cover with complete instructions.

Actual Size 6¼ x 7½

☆

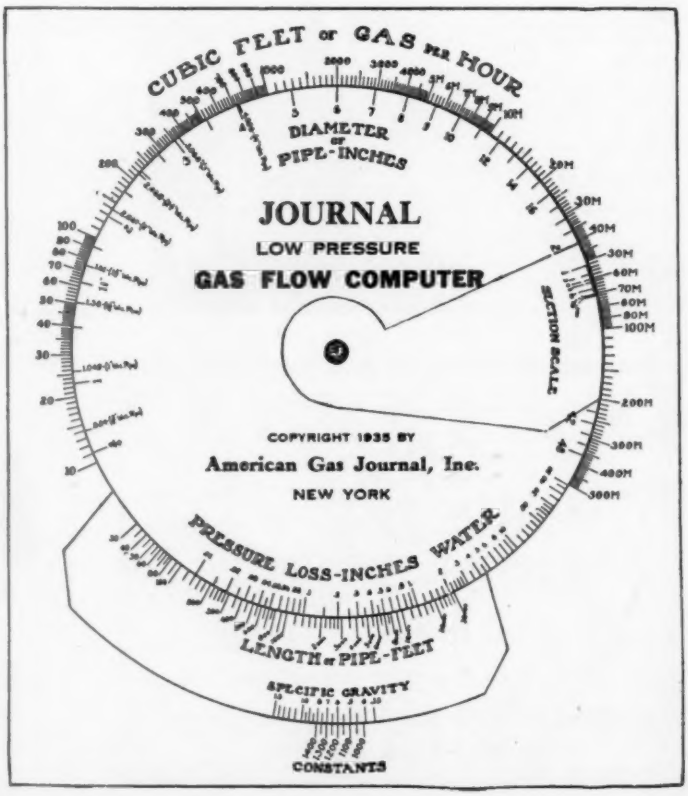
High Pressure Computer Range:

Cu. Ft. of Gas Per Hour—100-10,000 M
Diameter of Pipe Inches ¾-30
Difference in Absolute Pressure—Lbs. per sq. in. 1-500
Sum of Absolute Pressures—Lbs. per sq. in. 2000-20
Specific Gravity 1.5-.35
Length of Pipe—Feet 100-5000
Length of Pipe—Miles 1-250

Low Pressure Computer Range:

Cu. Ft. of Gas Per Hour—10 to 500 M
Pipe Diameter ¾" to 48" (including standard and actual weight up to 4")
Pressure Loss Inches .01-10.
Length of Pipe—Feet 30-30,000
Specific Gravity 1.5-.35
Constants 1400-1000

Price $4.00 Each, Postage Prepaid



AMERICAN GAS JOURNAL
53 Park Place, New York 7, N. Y.

Please enter our order for Computers as follows at $4.00 each, postage prepaid.

....HIGH Pressure Computer

....LOW Pressure Computer

NAME .....

ADDRESS .....

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Engineer Available

Gas operating engineer, some experience in manufacture and distribution of Water, Coal, and Propane Gas, desires position in gas company where he can get more operating experience. Single, State Licensed, graduate engineer. Florida location desirable but would be interested anywhere on Eastern Seaboard. Address: Box 181, American Gas Journal, 53 Park Place, New York City 7.

For Sale

Displacement Meter

1—18" x 54" Connersville rotary displacement meter, equipped with counter, differential U gauge and one P.V.T.T. gauge.

Maximum capacity 6,500,000 cu. ft. of coke oven gas per 24 hours. Operating pressure 12" water. Temperature of gas in pipe line from 70 to 90 degrees F.

Meter is graduated in cubic feet of gas at the standard conditions of 30" mercury and 60 degrees F.

Inlet and Outlet openings are as follows: Diameter of openings, 16"; Diameter of flange, 22½"; Diameter of bolt circle, 20"; Number of bolts, 12; Size of holes, ⅞".

IRON OXIDE

For purifying Manufactured Gas. 1000 tons ready for Summer delivery.

Write at once

William Vennes, Grand'Mere, P.Q., Canada

THE GOODMAN STOPPER

Now has the "Z" handle for easy manipulation. When locked in place it holds. Stopper cannot slip. Gas cannot pass. Adjusted in 30 seconds.

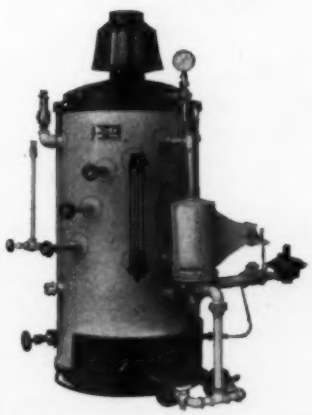
Ask for circulars on this and other distribution equipment.

Nearly a half century of service to the Gas Industry.

The Reliable Shut-Off for Street Mains

Safety Gas Main Stopper Co.
523 Atlantic Avenue, Brooklyn, New York

LATTNER GAS BOILERS
1 H.P. to 45 H.P.



2 H.P. Gas Fired Pressing machine boiler. 100 lbs. ASME Code.

P. M. LATTNER MFG. CO.
CEDAR RAPIDS, IOWA

(Continued from page 52)

tenance rate was reduced to 5682 Btu per hour, which is only 0.05% greater than the maintenance rate for the standard range model without a hood installed."

99.4% Moisture Removal

Mr Warren reported that when the oven was maintained at an equilibrium temperature of 500 Deg. F., and the fan throughout was 200 c.f.m., 93% of the sensible heat liberated by the oven burner heat was captured by the hood and removed from the range location. Steam was then introduced into the over, the stated, to simulate cooking vapors.

"The total moisture available in the oven then amounted to the moisture formed as a result of the combustion of the gas required to maintain an oven temperature of 500 Deg. F. plus the moisture introduced as steam. The hood captured 99.4 per cent of the total moisture available in the oven."

Warren's report explained that a series of tests were conducted on the top section of the range with the four rear burners operating simultaneously at total inputs ranging from 5800 Btu per hour to 36,000 per hour, or 1450 to 9000 Btu. per hour per burner. During each test an 8⅞ths inch diameter A. G. A. test pan containing boiling water was placed on the grate above each burner.

"The efficiency of the hood in capturing and removing the sensible heat liberated from the simulated top burner cooking operations described above were determined in each instance. The results of these tests expressed in per cent removal of sensible heat available are shown in the graph in Figure 3. It will be noted that for the total gas inputs to the four top burners ranging from 5800 to 26,000 Btu. per hour, or 1450 to 6500 Btu. per hour per burner, the heat removal efficiency of the hood was in excess of 90 percent. At higher gas inputs the efficiency of the hood decreased, being approximately 73 per cent when the input to the four top burners was 36,000 Btu. per hour or 9000 Btu. per hour per burner.

"For total inputs to the four burners ranging from 5200 to 19,000 Btu. per hour, the moisture removal efficiency of the hood was approximately 95 per cent. As the input to the four top burners was increased from 19,000 to 28.000 Btu. per hour the moisture removal efficiency of the hood decreased, being approximately 63 per cent at the last mentioned burner input. As the input to the four burners was still further increased, the reduction in moisture removal efficiency was more gradual, being 57 per cent at maximum input rating of 36,000 Btu. per hour."

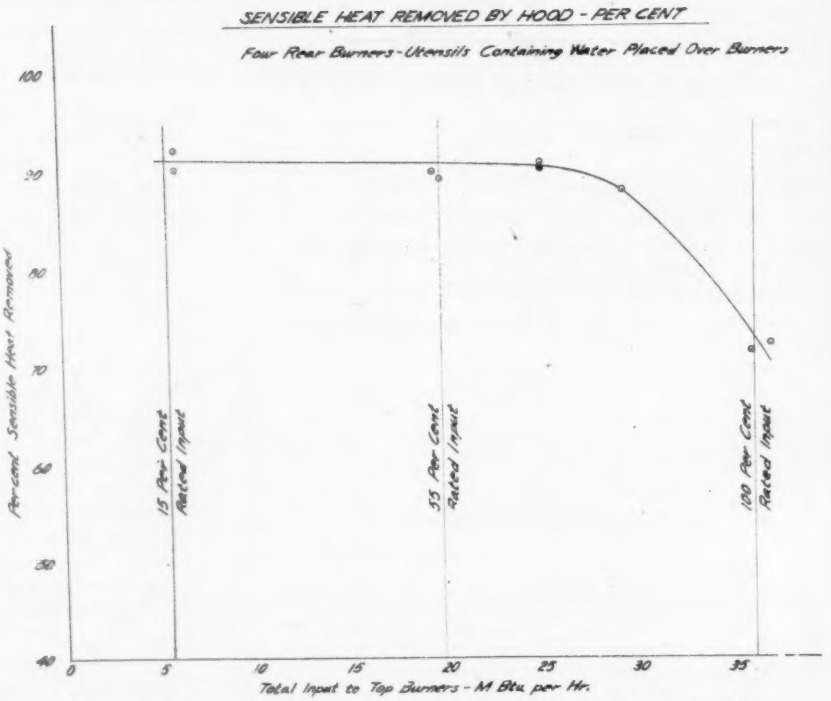


Figure 3: The sensible seat removed by the hood is indicated on this graph, which is based on experiments made during the development of the ventilating hood in the Gas Appliance Laboratory.

Warren explained that the efficiencies of the hood in removing odors resulting from top section cooking operations would probably approximate those shown above for moisture removal, as cooking odor, he pointed out, could be expected to move and diffuse in a manner similar to water vapor.

On the efficiency of the hood in capturing and removing sensible heat given off from cooking operations, efficiency factors were computed from data obtained in the heat removal tests. The calculations showed that the sensible heat removal efficiencies of 80 per cent, 87 per cent and 89 per cent could be expected for cooking operations in three different categories tested at the Gas Appliance Laboratory.

200 C.F.M. Air Throughput Adequate

In summarizing the conclusions drawn from the experiments, Mr. Warren stated that an air throughput of 200 c.f.m. appears to be quite adequate in that relatively high efficiency both for heat and moisture removal were obtained with the hood at that throughput. The efficiencies of the hood obtained with a 145 c.f.m. throughput were consistently lower and therefore a throughput of 200 c.f.m. may probably be considered optimum.

He added that if a fan average efficiency is used, a 1/15th H.P. motor should be adequate to obtain a delivery of 200 c.f.m. against the frictional resistance of the hood, piping and duct work.

No tests have thus far been conducted during this investigation to determine whether grease and dust will collect on the inside surfaces of the hood, ductwork or fan parts. However, no such collections of grease and dirt are expected to occur under the conditions of operation prevailing in the average domestic kitchen. Kitchen ventilating systems have been installed in the territory served by the Rochester (N. Y.) Gas & Electric Corp. for a number of years, and inspection of some of the first installations made have revealed no appreciable collections of grease and dust on the internal surfaces of such systems.

Tests that have been made on contemporary grease filtering equipment for use in commercial kitchen ventilating hoods, indicate that the construction of the domestic kitchen ventilating hood developed at the Gas Appliance Laboratory is such that any deposit of grease that may occur will be deposited on the porcelain enamelled surfaces on the underside of the hood, were it may be easily removed.